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No. 2381.—Vol. LI.

LONDON, SATURDAY, APRIL 9, 1881.

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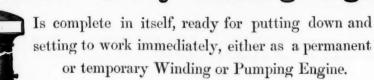
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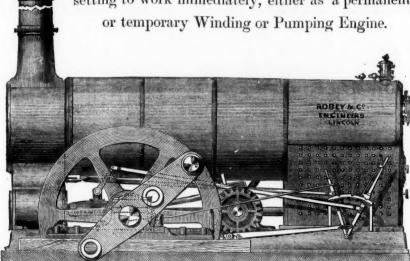
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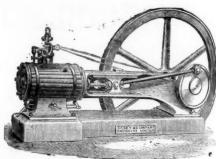
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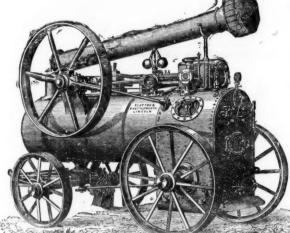
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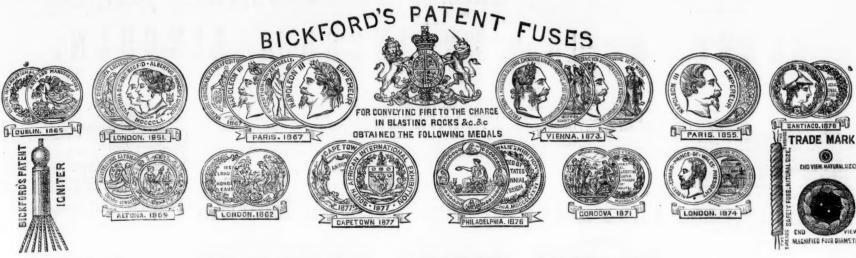
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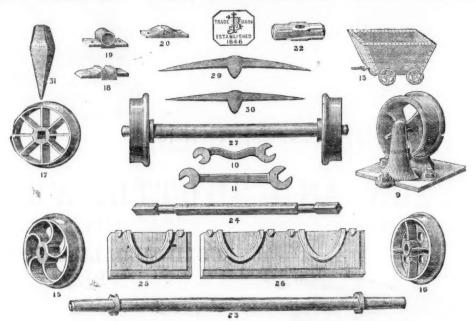
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NEW COAL-CUTTING MACHINE.

NEW COAL-CUTTING MACHINE.

There can be no doubt that the necessity for tramway and other arrangements adding materially to the expense has done much to prevent the more general introduction of coal-cutting machinery; but it is claimed that the Harrison mining machine, now being manufactured by Messrs. Whitcomb and Butler, of Chicago, is altogether free from these objections. It is from 5 ft. 6 in. to 7 ft. in length from the rear of the handles to the point of the tool, and being but 2 ft. high and 19 in. wide over all—so that it requires little room, and can be worked wherever a miner can use a pick. It requires but 18 cubic feet of air per minute at 45 lbs. pressure to run it; this is fed to the machine through a 1-in. four-ply hose. The projectile weighs from 50 lbs. to 70 lbs.—according to the length of the rod—and strikes from 200 lbs. and 250 lbs. blows per minute: the total weight of the machine is from 470 lbs. to 500 lbs. One skilled man will operate it, and one ordinary labourer is required to shovel away the cuttings. For ease in operating it the operator uses two boards of convenient size for a floor, which the labourer places in the required position as the work progresses. From 25 to 40 square yards of floor is the ordinary amount undercut by one machine each day. It has often undercut from 5 to 6 square yards of floor per hour cutting time; but we include all lost time for moving and other contingencies in our statement of a day's work. The tools can be sharpened by a blacksmith, the same as with an ordinary drill or cold chisel.

The Harrison machine consists of a small compressed air-engine, with a 34-in. cylinder. 11-in. stroke; to the piston-rod is attached a

sharpened by a blacksmith, the same as with an ordinary drill or cold chisel.

The Harrison machine consists of a small compressed air-engine, with a 3½-in. cylinder, 11-in. stroke; to the piston-rod is attached a pick that moves with the rate of 240 strokes per minute. The engine rests upon an axle having two small broad wheels, which serve to move the machine forward, and from place to place as the undercutting is done. There is no track necessary. The machine weighs something like 200 lbs. The power exerted to run this machine is less than 1-horse power; the engines used for operating the hoisting-rope in use in the slope or shaft will furnish sufficient power to run the air compressor which supplies the motive-power for the coalcutting machines. The Morris Run Coal Company, at Morris Run, 12a., have a duplex compressor, 18-in. diameter of cylinder, and 24-in. stroke, for use in running the Harrison Mining Machine. The compressed air is conveyed down the main entry in iron pipes, and then led off to where the coal-cutter is at work, through rubber hose. The machine will undercut a yard of coal—along the face—in 5 min. The cut is 4½ ft. in, and the depth at the face is something like 7 in, and at the back 1 in. Two men are needed to hold the machine up to its work, and guide it properly, and one boy to clean the slack away from the cutter. With this assistance, and in two shifts of nine hours each, 80 tons of coal per day is cut. It does not require skilled labour to operate, and has given complete satisfaction wherever used.

MANUFACTURE OF METAL FOIL.—Tinfoil, zincfoil, and othe foils have hitherto been manufactured by rolling or hammering blocks or plates. The new process introduced by Mr. T. SCHNITZ-LEIN consists in bringing the metal in molten state on to a pair of iron or steel rollers placed in a horizontal plane one beside the other. The space between the rollers can be varied and so adjusted that the metal after having once passed through the rollers gives a foil of the desired thickness. The diameters of the rollers, as well as the revolving velocity imparted to them, vary according to the melting point of the metal worked into foil. The metal may directly be poured on to the rollers or be led on to the rollers through a pipe or channel from the melting-stove. This new process saves a great deal of labour, and requires a far less power than the old system, and enables a foil of unlimited length and of superior quality to be produced. produced.

CELEBRATED BATTERIES.—In the year 1808 Sir Humphry Davy constructed a zinc and copper plate trough battery of 2000 elements. The length of spark was from 1-30th to 1-40th of an inch. With this battery Davy made the discovery of the galvanic carbon light. He obtained an electric arc of 6 in. Gassiot constructed a similar battery. This consisted of 3520 carefully insulated cups filled with rain water, of which each contained a zinc and a copper cylinder. By approximation of the poles to 0.02 in., sparks passed continually between them during five weeks. In the year 1875 the same physoist constructed a battery of 3000 leclanche elements, and a second of 3000 chloride of silver elements. The first gave sparks 0.025 in. long, the last in consequence of better insulation 0.0564. Mr. Warren de la Rue has lately constructed a battery of 14400 chlorides of silver elements. The construction of the battery continued from June, 1879, until August, 1880. The filling occupied 14 days, and was finished in the second week of December of last year.

Mr. Charles E. Robinson, from Messrs, Edwin Fox and Bousfield, CELEBRATED BATTERIES .- In the year 1808 Sir Humphry Davy

Mr. Charles E. Robinson, from Messrs. Edwin Fox and Bousfield, and Mr. Arthur J. Rudkin, from Messrs. Baker and Sons, have commenced business at King street Cheapside, as auctioneers, &c.

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port allo clud leas part that first pay the

may have for then N as c ness can cour accourage

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Original Correspondence.

COMPRESSED AIR TRACTION ON TRAMWAYS.

COMPRESSED AIR TRACTION ON TRAMWAYS.

SIR,—A correspondent signing himself "Lubricant" in last week's Journal may possibly know something about the Mékarski engine, but his letter is evidence that he knows little or nothing of mine. I, however, answer his questions.

1.—With regard to leakage.—As stated in my paper read before the Society of Arts last month, we are able to make reservoirs absolutely bottle-tight, with no leakage whatever. My No. 2 engine, when it left the Royal Victoria Docks last Christmas, had about 300 lbs. pressure remaining on the square inch, which sufficed to run the engine three months afterwards; and Mr. Daniel Adamson stated at a public meeting held at Dukinfield last January that my No. 1 engine whilst at his works was stopped when running at a pressure of 650 lbs., and remained at that pressure within a pound or two for engine whilst at his works was stopped when running at a pressure of 650 lbs., and remained at that pressure within a pound or two for 22 days, when it was attached to several wagons and gave over running at 200 lbs. on the inch.

running at 200 lbs. on the inch.

2.—As regards wear and tear.—My No. 1 engine has run many bundreds of miles, and so far as valves, adjustments, and details are concerned, is precisely in the same condition as when it left the maker's yard 12 months ago.

3.—As to lubrication.—The exhaust from my engine is sufficiently warm to keep the ordinary lubricants employed in a proper condition.

4.—I admit the air at 1000 lbs. direct to the working cylinders, without the internet working the ordinary lubricants employed in a proper condition.

4.—I admit the air at 1000 lbs direct to the working cylinders, without losing two-thirds of the original power, as is the case with the Mékarski and other engines using a reducing valve.

5.—My air engine is more easily controlled than a steam engine; and it is obvious that where the Board of Trade licenses mechanical power on tramways it must, to be serviceable, allow a speed equal to that of the ordinary horse cars; so that your correspondent's anticipation of a man walking constantly 100 yards in front of each engine with a red flag will not be realised.

FRED. BEAUMONT.

Victoria-street, Westminster, S.W., April 5.

SMOKING IN MINES.

SMOKING IN MINES.

SIR,—Several reports of the recklessness exhibited by colliers in smoking in coal mines have appeared lately in the Journal, and when read in connection with reports of the recent agitation against the masters' attempt to evade the provisions of the Employers' Liability Act call for a few words of comment. It is stated by the Miners Union that, since 1872, 1500 men and boys have been killed by explosious, but we are not told how mony of the deaths were due to the recklessness of the miners themselves. Yet it is notorious that smoking is the occasion of most of the explosions which have taken place in recent years. For instance, that at Blantyre, by which 28 men were killed, was evidently the result of the greatest carelessness, for Mr. Dickenson, the Inspector of Mines, who conducted the inquiry, stated that they found on the deceased lucifer matches, tobacco, and pipes, some of them appearing as if they had recently been smoked, while several of the lamps were unlocked. When matches cannot be secreted, all sorts of devices are adopted by the smokers to obtain a light for their pipes. In one of the most "fiery" mines in the Wigan district, in which 800 men are employed, the men are said to obtain a light by section through the gauze of the lamp. On one of the men employed at Blantyre, two brattice nails, ingeniously tied together, so as to form a key for unlocking a safety-lamp, were discovered, as well as a key for the same purpose, and made out of an ordinary door key.

Up to about four years ago the magistrates imposed a fine upon the toolhardy men who were caught smoking, but as the number of offenders increased imprisonment for four to six weeks was substituted. But even imprisonment for four to six weeks was substituted. But even imprisonment for four to six weeks was substituted. But even imprisonment, with hard labour, has failed to bring about reform, and more vigorous measures, or completer methods of supervision or safeguard, seem necessary. If the colliers themselves would take th

comes the regard for personal safety, and that great numbers of men, impelled by a resistless habit, risk their own lives and those of their fellow men for a "quiet smoke." Until they show greater regard for their own safety, and until they set a higher value upon life, it is monstrous to make the employers responsible for results caused by the criminal recklessness of their servants.

JUSTITIA.

EUREKA (NEVADA) MINING DISTRICT.

I beg to communicate my usual budget of news from this mining

I beg to communicate my usual budget of news from this mining centre:—

In 1871 the stock of the Eureka Consolidated Mining Company soid for \$7:25 ner share, and a great deal changed hands at less figures. Every man, however, who invested at that price has had a return of \$81 profit on every share of stock held; and yet the mine is scarcely more than in its infancy, and has since the period named been burdened with costly litigation.

Eureka Consolidated sold yesterday on the Board at \$25 per share. This is the highest figure the stock has touched for a long time. It ought to go to \$40. The Macon City Mine, located on Adams Hill, yesterday sent 30 tons of ore to the Eureka Monsolidated works, which yielded \$223:25.0. We understand that the mine is looking well and that the owners will soon make another shipment. In 1871 the Richmond Mine was sold in London for \$1,100,000, and has already returned \$2,855,600 in profits. A depth of only 500 it. has been attained, and from the second to the seventh level is now a solid mass of ore.

On the yard directly west of the Richmond Company retinery is a stack of lead which has been accumulating for a long time. A Sentinel reporter computed the weight of the mass at \$3,000 tons, it covers an area of 130 by 60 ft., and is piled to a height of 7 ft. in some places.

The Ruby and Dunderberg smelter has been in steady operation for the past three months upon ores from the company's mines. The employees of the company are now engaged in preparing another furnace, so that when the one now in use requires repairing they need not shut down for that purpose. They have sufficient coal on hand to last two weeks without the aid of coke, which they use to a considerable extent. The ores, of which they use to a considerable extent. The company's mines are in a very prosperous continue about 3 tons per week. The company's mines are in a very prosperous continue who in use requires repairing they need not shut down for that purpose. They have sufficient coal on hand to last two weeks with

is that it is the intention of the company to continue working and developing the property.

Articles of Incorporation of the Eurela (Nevada) Silver Mining Company were flied in the County Clerk's office yesterday. The incorporators are R. Rickard, J. J. Kermeen, Jas. Wilson, Wm. Pardy, and Geo. W. Baker. The capital stock of the company is placed at \$500,000, divided into 100,000 share, at the par value of \$5 each. The objects of the incorporation as set forth are mining, tunnelling, milling, smelling, &c., and the principal place of business is at Eureka (Nevada). Messrs. John Masterson, and George Burgess have taken a lease of the Kentack Mine, owned by the Eureka Mining and Smelting Company, which is located about 2 miles west of Prospect Mountain, and adjoins the celebrated Mountain Boy Mine. Both of these mines have yielded large amounts of ore, and are looking well at the present time. The lessees think they have prospects before them.

Messrs, John Masterson, and tweek Mining and Smelting Company, which is tack Mine, owned by the Eureka Mining and Smelting Company, which is located about 2 miles west of Prospect Mountain, and adjoins the celebrated Mountain Boy Mine. Both of these mines have yielded large amounts of ore, and are looking well at the present time. The lessees think they have prospects before them.

**M. Bobinson yesterday located the Ned mining claim, containing 1000 ft., situated on Ruby Hill, adjoining the Albion Mine.

The yield of Ruby Hill alone, since the discovery of ore 10 years ago, is over the yield of Ruby Hill alone, since the discovery of the years ago, is over the yield of Ruby Hill alone, since the discovery of the years ago, is over the yield of Ruby Hill alone, since the discovery of the years ago, is over the yield of Ruby Hill alone, since the discovery of the years ago, is over the yield of Ruby Hill alone, since the discovery of the years ago, is over the yield of Ruby Hill alone, since the discovery of the years ago, is over the yield of Ruby Hill alone, since the discovery of the years ago, is over the yield of Ruby Hill alone, since the discovery of the years ago, is over the yield of Ruby Hill alone, since the discovery of the years ago, is over the yield of Ruby Hill alone, since the discovery of the years ago, is over the yield of Ruby Hill alone, since the discovery of the years ago, is over the years ago, and y

The yield of Ruby Hill alone, since the discovery of ore 10 years ago, is over \$50,000,000. This has been taken from ground 6000 ft. long, by 1200 ft. wide, and at no greater depth than 1200 ft.

George W. Cassidy has purchased the interest of Mrs. Mary Burke in the Banner Mine on Prospect Mountain.

Paxton and Co. have elevated a handsome new sign over their banking-house. The letters are of gold bronze set in a black surface, which makes them quite conspicuous from the opposite side of the street.

#15 rumouved that the Bonanza firm have purchased the Wells-Fargo mining avancasty.

At is rumouved that the Bonanza firm have purchased the Weinstrage Superity.

Superine endent Robinson, of the Bay State Mine at Newark, was in town yesterday. Me informed us that his mine is looking well, and as soon as the roads will permit he will be mine to be a fore at Eureka.

Work is progressing rapidly on the Alexandria Mine.

Adam Hall is working the Sterling, with large quantities of good ore in sight. Three men are now employed at the Dead Broke. The mine is yielding first-class ore, 50 tons of which are on the dump.

At the Silver Connor work is being prosecuted actively. Last week 25 tons of ore were extracted from the 250 and shipped.

The Williams is yielding high-grade ore, with an abundance still in sight on the 200 and 300. This property has paid its owners handsomely from the grass roots down to the present depth.

When the weather permits the El Dorado will commence shipping the ore now on its dump.

on its dump. rumour is affoat that operations in the old Jackson Mine will soon be re-

give results varying from \$29.49 to \$371.53 per ton, principally in gold, which, as compared with the last pulp assays that worked up to \$119 per ton, of which only one-fourth was gold, shows a very great improvement in the quality of production.

Day one-location of the line o

UNITED MEXICAN MINING COMPANY.

SIR,—Can any of your readers enlighten me as to the cause of the continued neglect of the shares of this company? Here is a concern with a large extent of unexplored territory, proved to be auriferous, and worked with the most improved modern appliances, just on the eve of realising all the most sanguine expectations that have been formed of it (this is evident from last week's Mining Journal, which extent in the latest week's Mining Journal, which contains the latest accounts received from the mines), and yet the shares are less sought after than some of the lately introduced Indian mines, and I as one who has watched the progress of the company for many years past, and seen the quotation of the shares carried to more than double their present price without half the expectations of the moment, this is quite inexplicable, and I should be thankful to any reader who may be able to explain it to me.

A SHAREHOLDER.

THE RUBY AND DUNDERBERG MINING COMPANY.

SIR,-In common with my fellow-shareholders in the Ruby and SIR,—In common with my fellow-shareholders in the Ruby and Dunderberg Mining Company, I have been favoured witha circular from Messrs. C. T. Reeves and Co., with a copy of the company's balance-sheet of Sept. 30, and their own synopsis of it. Needless to say, this is garbled to suit Messrs. Reeves' and their friends purpose, to "bear" the shares, and is only on a par with other efforts which must be fresh in the memory of your readers. I would remind those that the balance-sheet of the company, when issued, was audited by a firm of accountants of first-rate standing, whose synopsis of the same accompanied the balance-sheet, and which I prefer to any biassed synopsis of so-called stock and share brokers.

London, March 31.

ANOTHER SHAREHOLDER.

SENTEIN MINE.

SENTEIN MINE.

SIR,—I have not had time to attend to Mr. Dingey's remarkable letter published in the Journal of March 19 before, and I was in some hopes, for his own sake, he would not pursue the subject any further—a subject he knows so little about; but as he will not be silent he must take the consequences. I have not sought this discussion and shall not prolong it. First of all I insist on Mr. Dingey's proving his statement that the company had kept 500% from my account for surplus machinery. This statement, notwithstanding the fact of its being a silly fabrication, he must either retract or prove. Neither the public nor I have anything to do with his bill. If he got 325% for what was shown me as the stuff he sent to Sentein, it was 250% too much; indeed paying the freight alone was too much for it, and this Mr. Dingey proves by his own figures, and the marvel is that he has had the temerity to put them in print. He says "that the directors at their first annual meeting stated that they were then able to dress 30 tons of silver-lead ore and 45 tons of blende per week," but I presume they did not do so, because the produce for the five received as the support of the content of the produce for the five received were then able to dress 30 tons of silver-lead ore and 45 tons of blende per week," but I presume they did not do so, because the produce for the five received as the support of the produce for the five received as the support of the produce for the five received as the support of the su for the five months working at this rate of production would equal—
630 tons of silver-lead, at say 12l. per ton..... = 7560l., and
995 , blende , 4l. , = 3980l.

Mr. Bingley gives the five months sales as . 11,540*l*., while 4806*l*. 12s. 9d. How very exact! I ask how he explains this little discrepancy? Let him do this and give the proof as to the deduction of 5007. from my account as mentioned above, and I think he will have his hands full for a little time. Afterwards I will deal with the 9721, 10s. 7d. dressing cost to his heart's content. He will then have a surfeit of of my figures I assure him.

GEO. GREEN. Machine Works, Aberystwith, April 5.

CANADIAN MINING NOTES.

CANADIAN MINING NOTES.

SIR,—I send by to-day's mail an account of our iron industry. There is no doubt there is a growing feeling in the country that the good effects of home production of iron and steel from native ores—or, as we say in Canada, the good effects of the National Policy—should be applied to Canada. At present the duty is only \$2 a ton, and it is contended that with a greater duty blast-furnaces would spring up, and the price of steel and iron rails, and all kinds of manufactured iron, would decrease. They argue this from the example of the United States, and that view of the subject is strongly brought out in the report which I send you. It certainly appears to me a queer thing that English ironmasters have not started branch furnaces in Canada. With such a road as the Canadian Pacific to build, and with such a country as the whole of Europe to develope, there and with such a country as the whole of Europe to develope, there would appear to be a good field, and they would have enough surplus ore from some of our mines to keep their works going in England; it is well worthy of attention. This is a short letter this week, but the report is of considerable length.

BOURNONITE.

Brockville, Canada, March 22.

ARENDAL COPPER MINES. SIR,—Do the public know that these mines are now making 1000l, or more profit a month? Let any one consider this, and read the manager's report, which will likely appear in this week's Journal, and say if the 4l. shares of the company should be at a discount. The capital of the company is 12,000 ordinary shares of 4l. each, and about 7000 Six per Cent. Preference shares of 1l. each. It does great credit to Captain Daw, and will be a feather in Mr. Murchison's cap, he having visited the property before taking it up, and with great judgment recommended it to his friends.

April 6.

A SHAREHOLDER.

A SHAREHOLDER. SORTRIDGE COPPER MINE.

SIR,—I lately read in your Journal some remarks on this valuable property, which brought vividly to my memory the lights of other days. I can remember well the extraordinary excitement, which lasted for a considerable time, arising from the wonderfully rich discoveries at Sortridge Consols, as it was then called. The ore was very rich, and they sold a good many thousand tons of it, out of which dividends were paid. It was generally considered that the mine was not worked properly, otherwise I believe it would never have been stopped. No practical steps were taken to find the lode to the west of the cross-course, to the east of which it had been so very productive. This has been reserved for the benefit of the present owners, who have already met with it under circumstances that are almost certain to lead to a great discovery in a few fathoms sinking. It is also believed that under the deep adit the main or best part of the lode has been missed, and that a proper exploration will discover good courses of ore by the side of the old workings. Very soon after the company take possession and carry out some judicious operations there is scarcely a doubt SIR,-I lately read in your Journal some remarks on this valuable sion and carry out some judicious operations there is scarcely a doubt but that the mining world will be astonished by discoverie have not been met with for years past.—Tavistock, April 7.

CIRCULAR BROKERS AND MINING PUFFS.

SIR,—I think your correspondent "Bulbus" has done the general public good service by alluding in your columns in a sarcastic manner to the ridiculous schemes and not very straightforward ventures that are forced upon one's notice by means of circulars. Knowing the are forced upon one's notice by means of circulars. Knowing the value of your space, I will content myself with stating what has just lately happened to myself, and asking if any of your readers can explain the two statements that two or three posts brought me. About March 27, 1881, I received a circular letter headed The Cwm Pryf Mines Lead Mining Company (Limited), and signed, Henry Francis, Secretary. This letter gave notice of an extraordinary general meeting of the Cwm Pryf Mines, to be held on April 11, for the purpose of passing two resolutions; the first to wind, and the comthe purpose of passing two resolutions; the first to wind-up the company by voluntary liquidation, the second to appoint Griffith Williams and Thomas Williams liquidators. So far so good. Well, but on Commenced the Commence of the Developments show a great change in the El Dorado No. 2 Mine the latest developments show a great change in the character of the ore, which appears to be for the better. The latest assays

Poulter, Gray, and Co. printed on one side, and the address, 31 Threadneedle-street, London, E.C. on the other. The heading was almost the same as on the other letter—Cwm Pryf Mining Company; but there was this difference—it said nothing about liquidation. It ran thus:—Dear Sir: "We beg to inform you that no applications can be received for shares in the above company at 5s. per share fully paid after Monday next, the 4th inst. Should you, therefore, wish to secure any your application must be sent to us by the above date, after which no shares will be sold under 10s. fully paid," and was signed by Messrs. Poulter, Gray, and Co. Perhaps they wished to make an April fool of me, but I think I should have been more than April fool if I had applied for any shares at 5s., or waited till they were at 10s.

MINING IN ROCHE.

SIR,—A friend informs me that I was in error in stating iu my last letter that Capt. D. Cook was joint proprietor with Mr. Marshall of Edgeumbe Consols. I find that Capt Cook is merely the consulting engineer of the work.—Truro, April 6.

R. SYMONS.

PHŒNIX UNITED MINES.

PHŒNIX UNITED MINES.

SIR,—There are some mines in Cornwall with which wealthy people are connected, and but for whose pluck and foresight those mines would have been abandoned during the late depression. I refer especially to Carn Brea, Tincroft, and Phœnix United. Capt. Teague, the manager of the two first named, when the mines were losing heavily, did not advise, as many having such a heavy interest would have done, the suspension of works; but having faith in the future advance in tin, held on till the return of prosperity. It was well he did so, and all concerned must approve of his proceeding, except the concealment from his co-adventurers of the financial condition. The late Mr. W. West, C.E., who held two-thirds of Phœnix Mine, adopted a similar course. He held on the works at a considerable outlay, and now—as in Tincroft and Carn Brea—profits have returned, and are likely to be largely increased as the mines are opened. This is a valuable mine indeed, and I intend to send for next week's Journal particulars which will be interesting to your readers.

April 6.

R. SYMONS. R. SYMONS April 6.

MARKE VALLEY MINE.

SIR,—As an old shareholder in this mine, I am pleased to see that the managers are at last giving their attention to the tin lodes in the Wheal Jenkin part of this extensive sett. It is more than 40 years since these lodes were last worked, when tin was at a very low price, and very little known in East Cornwall (as evidenced by the long neglect of the tin lodes in the adjoining Phœnix Mines), and I have no doubt from what I have seen and heard of these lodes that Marke Valley will soon become one of the richest tin mines in the eastern part of the county. Allow me to suggest to the committee of management, now that they have a boring machine in their deepest level at Marke Valley, the advisability of putting out crosscuts to intersect their other lodes. It is well known that the very rich lode of Dunsley Phœnix underlies into Marke Valley at a very shallow depth, and just at the junction of granite and killas.

SENEX.

BWLCH UNITED.

BWLCH UNITED.

SIR,—When I called attention to this property in my letter, which appeared in the Journal of March 20, I was not quite prepared for the very sudden improvements in the prospects of the mines which have since taken place; but as to the absolute certainty of its becoming in a short time one of the most prosperous and lasting opened out in the Principality, nothing could shake my opinion or confidence in its so doing; and I will, with your permission, here state a few of the reasons for forming this opinion. I will first mention that the course of ore on this lode in the Goginan grant, and extending eastward from ½ mile from the Goginan and Bwlch United Mines, and towards the latter, and which have already produced considerably more than 1,000,000!. worth of silver-lead ore, was found immediately at and to the east of a junction with it, and a vein that runs 30° south of east, and a like number of degrees to north of west. This course of ore has been worked to a depth of 90 fms. under adit, or 150 fms. from surface, at Frances's shaft, which was the first that was cleared up and sunk under the deep adit when the mine was started, more than 40 years ago. This course of ore, although not continuous, there being unproductive portions of the lode between the courses of ore, may be said not only to extend on to the boundary but into the Bwlch United grant, when it meets with a lode running in precisely a similar direction as the lode, that with its junction formed the rich course of ore alluded to at Goginan; but here the lode, running 30° south of east, is of a much finer and better character in every way than the lode running in the with a lode running in precisely a similar direction as the lode, that with its junction formed the rich course of orealluded to at Goginan; but here the lode, running 30° south of east, is of a much finer and better character in every way than the lode running in the same direction at Goginan, the latter being composed entirely of quartz—as may be seen in passing the road leading to Bwlch United—near and a little to the west of the Goginan pumping-wheel, whilst the lode a little to the south-east of its junction with the main lode has yielded thousands of tons of rich ore in the Bwlch United grant, and to the last company that worked returned 50 tons per month, not only paying its cost and the Bwlch proper, but also enabling that company to pay handsome dividends as well. Now the junction of the main lode with this made by far richer bunches of ore than was the case in any part of Goginan, or elsewhere, on its course, which has been opened on from the western portion of Goginan to its eastern extremity at Caenant, a distance of two miles, the average width of the lode being a little over 20 ft., whilst for 50 fms. east of the Goginan boundary the vein expands to over 60 ft. wide, and was worth in places over 300L per lineal fathom.

This course of ore has been worked only 75 fms. long in this grant, and I will venture to assert that not a fathom of it has been taken away under the 60 from the Bwlch adit, or in the deepest place 75 fms. from surface, whilst in Goginan the rich bunches of ore have been worked down from the Goginan and Bwlch boundary, taking it as the surface line to a depth of 200 fms. It will be quite impossible here to go into a lengthened or even a proper account of the very limited extent of the workings that have just taken place in this grant, but a glance at the plan and section, if such there be, would show that the mine has been dug down into a regular hole, the deer start the first of the morth of it, and, in fact, as I before pointed out in a former letter, for more than 200 fms. on t

From the manner I have described the workings of the mine it will be evident that there all the ground opened very rich and very productive, but worked as it has been no satisfactory results as to profits could possibly ensue. It will be well to point out here that the system of working pursued must have been attended with an immense cost, for the sinking of shafts not only requires a large amount of money for breaking the ground, but a far greater amount in pitwork and timber and the requisite machinery for accomplishing it. All money for breaking the ground, but a far greater amount in pitwork and timber and the requisite machinery for accomplishing it. All this has been done, and, save but in one instance only in this county, has half so much ground been sunk in the same time as in this instance, and the advantages which may possibly be derived from it when discoveries are made in your shallower levels cannot possibly be over-estimated, as deeper levels could be instantly passed under such discoveries, and would be reached and worked at a very small cost, which could not be done had not the shaft been sunk as it has

cost, which could not be done had not the shaft been sunk as it has. It would be wise to select, in a proper position, not only here but in every mine in not only this county but in most mines throughout the kingdom, two pioneer levels, to be kept constantly going without intermission by a full party of men, one east and the other west, and in this mine, if this course were adopted, about 200 yards, or 100 fms. yearly, would be opened out, and would lead to such results as has never been the case in any other mine in the country.

as has never been the case in any other mine in the county.

I cannot refrain from stating that more than two-thirds of all the mines throughout the country have been suspended from the want

of these pioneer levels being extended throughout each mining grant, the shafts being sunk to enormous depths, as in Cornwall, and these 10 fm. levels extended to a certain blank piece on the productive portion of the lode, and then allowed to remain. The system hitherto adopted for mining generally is a disgrace to the present generation, and involves not only a wilful waste of money, but time as well; and with the improved boring apparatus and compressed air machines I may safely predict that the present 10 fm. level system is doomed, and that with it, and increased energy, a moderate amount of capital judiciously laid out will enable home mines not only to compete successfully against foreign mines, but to drive a great number of them out of the field.

I must now bring matters to a close by saving that by rescription.

number of them out of the field.

I must now bring matters to a close by saying that by pressing your deeper levels westward under the magnificent courses of ore I have described, by opening out a good pioneer level throughout the grant on your main lode, east of Doran's, by working the Pwll-rheneidol portion of your grant left rich in the bottom, and making a proper trial on your south lode, you have a property that can be made to yield an annual profit inferior to none in Wales.

Gogiuun, Aberystwith, April 5.

Absalom Francis.

WEST KITTY MINE COMPANY

SIR,—As the proceedings of this very protracted meeting as reported in last Saturday's Journal may not be quite clear to the public, allow me to say that the 3500*l*. purchase money and interest will include all the vendors are to receive for the machinery, plant, and leases, and that a call cannot be legally made to pay this sum or any part of it unless with the written consent of every shareholder; and that, in the meantime, the shareholders are not liable for it until the first profits of the company (as made) will enable the committee to that, in the meantaine, the shareholders are not liable for it until the first profits of the company (as made) will enable the committee to pay it off. The vendors considers their security perfect. It includes the first charge of everything on the mine, and of everything which may be placed on it previous to the settlement of the claim. They have therefore no wish for the mine, to be weeked the constant. have, therefore, no wish for the mine to be worked otherwise than for the permanent advantage of the company, the more so as they themselves are very lagely interested as holders of West Kitty shares. No doubt Mr. Lane, Mr. Payne, and others consider this payment accretion to be made, and as interest would be saved they as business.

as certain to be made, and as interest would be saved they, as business men, want it cleared off at once. The legal difficulty, however, cannot be surmounted, and I think it better to let matters take their cannot be stimulated, and I think it better to let matters take their course, as the amount will be paid the moment it can be discharged, according to the agreement, and without prejudice to the fair working of the property. Bothvendors and shareholders may rest assured there shall be no needless delay, especially after the discussion on the 31st ult.

JOHN B. REYNOLDS.

37, Walbrook, London, April 4.

REPORT FROM NORTH WALES, SALOP, AND CARDIGAN.

April 7.—The reader will be good enough to make the corrections in the description given last week of the mineral deposits of the limestone district of North Wales. For "south," given as the general dip of the east and west lodes, he will read "north;" and the word "antique," used in reference to the North Hendre flat, should be

"unique."
The whole of the fissures and cavities I have described have become filled with various substances. These may be locally described as earthy and metallic. With reference to some of the substances, the word "earthy" would not be deemed by hypercritics scientifically correct, but I use it here in a general and practical sense, to distinguish those substances from the useful metals about to be referred.

These earthy substances consist mainly of the metals of which These earthy substances consist mainly of the materials of which the surrounding rocks are composed, and they lie in the cracks, redeposited in various forms—clay, chert, sand, sandstone, carbonate of lime, often in crystalline masses, and fragments of limestone.

Occurring in various positions throughout these substances are the ores of lead, zinc, and copper, with the oxide and sulphide of iron more widely distributed throughout the entire masses of them. The more widely distributed throughout the entire masses of them. The principal depositions of copper ore have been found at the two ends of the limestone belt, the great Ormes Head to the north, and Llanymynech Hill to the south. The ores (sulphide, and more rarely carbonate of copper) occur throughout certain shale beds in the lower part of the limestone, the ores being most concentrated and strongest where cracks come down from above upon these shale beds. The ores of lead are chiefly galena, sulphide of lead, and cerussite, or carbonate of lead. In the true lodes the first of these occurs in strings and layers, which often unite into hunches and research strings and layers, which often unite into bunches and masses.

The whole of these occur chiefly on the heading side of the lodes.

On the hanging side, however, the side veins—fliers and branch lodes which come into the main lodes from that side are usually most

In the flats and pockets, and in portions of the great north and In the flats and pockets, and in portions of the great north and south lodes, near the points where these are intersected by east and west lodes, the galena occurs in the shape of lumps of all sizes up to \(\frac{1}{2}\) ton in weight of pure ore, rounded at the edges, and with a coating of carbonate of lead. These lumps are often found agglomerated or gathered together in great masses, as they were at Prince Patrick Mine, and these masses or runs are separated by intervals of barren ground. In the horizontal flats the ore occurs both in the form and also in the manner in which it is found in true lodes. The carbonate of lead is generally found in the flats or pockets. It fills the hollows of the underlying limestone rock, and sometimes forms a stratum 1 or 3 ft. thick, mixed with ferruginous clay, such clay filling up the pockets or flats above it up to the overlying limestone. Along with these ores of lead there are found in various parts of the district the ores of zinc, blende, black jack or sulphide of zinc, and calamine-carbonate of zinc; the former of these is the most abundant. It occurs almost exclusively in the true lodes usually lying in strings, bands, and masses above the deposits of galena, as above described. Deposits of calamine are rarer. A nice example of one occurs at Deposits of calamine are rarer. A nice example of one occurs at the western side of the Park Mines, Minera, and the story is that formerly the roads near Holywell were repaired with fragments of this ore, the miners being ignorant of its value. Besides the ores of the two metals I have referred to are other and rarer ores of the same, but as they are of more interest scientifically than commercially I will not notice them further now.

A number of gentlemen said to hail from London have been are

A number of gentlemen said to hail from London have been prospecting in the Dolgelly gold region, and have secured the tack-notes of ten grants of land. We may, therefore, expect to hear more of gold mining in Wales. I for one think there is scope for honest, or gold mining in Wales. I for one think there is scope for honest, intelligent, and economical mining for gold in the Dolgelly district. As yet the problem is unsolved whether, with the appliances used at the best gold mines in Australia and clsewhere, the gold contained in the ores of this district may not pay for working. What I dread, and what cannot be too strongly deprecated at once, is a recurrence of the gold mania 25 years ago, the wrecks of which are to be seen stranded on the hill sides to-day; or still worse, the shifting of the recent Indian gold madness to the mountains of Merionethshire.

We wait for further movements.

With the Baltie and other Northern ports still closed by ice and With the Baltie and other Northern ports still closed by ice and tempestous weather, the slate trade is in Carnarvonshire very quiet, and slates may be bought at high discounts from the list price. Most of the quarries from Bethesda to Nantlle are working short time, and the slab depot near Mold Junction, with the ports of Bangor, Dinorwic, and Carnarvon, have an exceptionally quiet look. Still, speculation in quarries is strong in the latter town, where a number of gentlemen have bought and still buy quarries for further development and working. Among these is one near the southern number of gentlemen have bought and still buy quarries for further development and working. Among these is one near the southern end of the range, near Llanllyfni, referred to by me in my report of January 29. I wish them success. Labour being cheap, this is the time for opening and developing slate quarries.

The coal trade is also very quiet. Even the principal collieries in the district, such as Plaskynaston and the Ruabon Coal Companies' pits are working short time. The Elms Colliery, near Buckley, has given notice that all contracts will terminate on the 12th inst. If work ceases here between 300 and 400 men will be thrown out of

work ceases here between 300 and 400 men will be thrown out of

to be hoped that a good many owners of lead mines will take comfort from the sage remark made by Mr. Pree Jones, the Chairman at the last tempestuous meeting of the Van Consols Company,

to the effect that there was at the mine a large extent of unexplored ground. This is a reserve which most mines possess, but which machinery cannot well be found to dress. The question of ordinary and extraordinary traffic along reads still goes on. Now it is whether the carriage of materials used for building a house is extraordinary traffic. I travelled with a sorely bewildered highway guardian the other day. He could not tell which was which, only he said now that they had stopped the traction engine from carrying the barytes from Wotherton Mines to Montgomery Station a great deal more harm was done to the reads by the narrow wheeled carts now employed. He seemed to catch eagerly at my simple remedy for all this confusion and damage to trade, and injustice to the occupier of land, which I have already propounded in these columns—a tax of 3d. per day per horse on horses of traders not paying highway rates upon land, and 6d. per day per each 1-horse power on the capacity of traction engines. Meanwhile the confusion, the damage to trade, and the injustice to farmers go on, the only strength to grapple upon land, and od. per day per each 1-horse power on the capacity of traction engines. Meanwhile the confusion, the damage to trade, and the injustice to farmers go on, the only strength to grapple with the question by the authorities being apparently the strength that determines towards the mouth. Although scarcely equal to the anticipations of three years ago I am glad to see the results attained at the Great Holway Mines. If I read the reports rightly the success comes more from the middle than from the deeper workings. One thing the owners may be sure of—Capt. Harris will do his duty, with ability.

REPORT FROM CORNWALL.

April 7.—Interest is just now to a large extent concentrated rather on shares than on standards. This is due not alone to the general steadiness which has marked the tin trade of late, but to the anticipations reasonably entertained of very pleasant reports in several leading concerns. There has been of late much improvement in many prominent mines, so that even with present prices we may hope to see the Dividend List largely augmented.

A change is about to take place in the personnel of several mines by the retirement of Mr. Abbot from his various purserships. It will not be altogether easy to replace a gentleman at once so obliging and so exact. The accounts are spoken of as models of

obliging and so exact. The accounts are spoken of as models of scrupulous accuracy.

Pitwork is in no way a sensational subject, nor one likely to excite any very large amount of enthusiasm. Indeed, even by very many practical miners it would be regarded as rather "dry," and as a matter upon which there was very little new to be said, and the smallest possible chance of information. We regard the subject, however, in quite another light. We do not believe that Captain Teague, jun., at all exaggerated its importance in the capital paper which he read last week before the Mining Institute, and we are convinced that, so far from its being thoroughly understood, there are many little adaptations and arrangements in use in different mines of which the mining world at large has little or no knowledge, however much familiarity there may be with the main features of the department of mining machinery and plant. One very important point of a general character dwelt upon by Captain Teague was the desirability of extending the area of duty reports. At present the reports of engine duty are interesting, and within a Teague was the desirability of extending the area of duty reports. At present the reports of engine duty are interesting, and within a limited area, valuable as they are, produce practically no effect whatever upon the economical working of our engines generally Captain Teague's idea is that every engine on a mine should be fully reported, not letting "any particular one shine at the expense of some poor old rattle-trap struggling for existence," making exception of the known best to the exclusion of the known worst, but reporting all and with the average data gives present the expense of the same and the structure and the same and the same area.

some poor old rattle-trap struggling for existence," making exception of the known best to the exclusion of the known worst, but reporting all, and with the average duty, giving particulars of all the coals consumed. Into the merits of the various proposed details of practical arrangement brought forward by Captain Teague this is not the place to enter; but their discussion cannot fail to do good, and meantime this extension of reporting is a matter as to the desirability or utility of which there can hardly be two opinions. There could not be a more satisfactory proof of the practical value of the training conferred in the classes of the Miners' Association than the fact that three young men of the Camborne class have carried off the three first prizes offered in blowpipe analysis by the City and Guilds of London Institute. This is thoroughly practical work, which is not beyond the capacity of our young miners generally, and which is calculated largely to increase their efficiency, inasmuch as it is a direct training of their judgment and enlargement of their experience on the lines of their calling. Mr. Benedict Kitto, F.G.S., may well be proud of his pupils, who have derived also very great advantage from the use of the excellent laboratory which Mr. Basset's liberality has provided. Devonshire is about to have an exhibition of its manufactures in pottery at Newton Abbot, in connection with the School of Art there, which is expected to be the fullest illustration of the potter's art ever seen in the West of England, and to which it is intended to give a thoroughly practical hearing in the development of this local industry. It is a singular fact that while Cornwall raises by far the largest quantity of china clay, and while it possesses many other clays of the highest value, the development of the creamic art therein is both slow and by comclay, and while it possesses many other clays of the highest value, the development of the ceramic art therein is both slow and by comparison little varied. Devon has less china clay but a wider variety of other clays than Cornwall; and in point of cost of working potteries—in the matter of fuel, &c.—is no better off than the sister county, and yet it has now several very large potteries both utilitarian and artistic. Cornish enterprise could surely do something more in this direction, and the Newton Exhibition may give the needed stimulus and hints.

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

April 7.—Yesterday in Wolverhampton, and this afternoon in Birmingham, business in "marked" iron, whether in the form of bars, sheets, or plates, was conducted on the basis of the 10s. drop, which has now been declared by all the houses that aspire to the distinction of "marked" firms. Bars were, therefore, 7l., and those of the Earl of Dudley 7l., 12s. 6d. Messrs. E. T. Wright and Sons new prices for plates were 8l. 10s., and for sheets 8l.—each a reduction of 10s. Second-class finished iron was down in actual sales between 2s. 6d. and 5s. per ton, though makers loudly protested that they could not afford to make any concession. Open market prices, therefore, of and 5s. per ton, though makers loudly protested that they could not afford to make any concession. Open market prices, therefore, of such iron were without change at—sheets (singles), 7l. to 7l. 10s.; and common bars, 5l. 12s. 6d. to 5l. 15s. Best stamping sheet makers declared that they should not at the Quarterly Meetings next week follow the example of the marked bar houses. Their prices, therefore, stand for the present at 12l. to 15l. for singles. Tin-plates were worth more money by 6d. per box upon the week, making the open market quotations for cokes 17s. to 18s. delivered in Liverpool, and for charcoal sorts 22s, to 23s. In actual business best pigs were easier by from 1s. 3d. to 2s. 6d. per ton, consequent upon last week's drop in coal. Quoted rates, however, did not show change. Tredegar hematites were 3l. 7s. 6d., and Blaenavon hematite agents were attempting to get 3l. 7s. 6d. Furnace coal was 8s. to 9s., according to quality, and force coal 6s. to 7s. 6d. slack varied between 2s. 6d. attempting to get 31. 7s. 6d. Furnace coal was 8s. to 9s., according to quality, and forge coal 6s. to 7s. 6d.; slack varied between 3s. 6d.

to 5s., all at the pit's mouth.

It is reported that Messrs. J. Bradley and Co. have given notice to their operatives of their intention to at once close their Brierly Hill Works, which consist of eleven puddling furnaces and three mills. The Stourbridge and Shut End works of the firm are, however, to be

kept in operation.

The annual report of the Chillington Iron Company, Wolverhampton, laid before the shareholders, states the current outlay to have been upwards of 282,300%, and the permanent outlay in machinery, reconstructions, and surrender of lease to have been 4500%. Placing this permanent outlay on the credit side of the account there remains, including 700l. bad debts, a gross deficit on the year's trading of about 9000l. The report states that the edgetool and galvanising branches have paid. The loss has arisen in the mills and forges by

the fall in prices.

A petition for liquidation was filed, on Wednesday, in the Walsall County Court on behalf of the three partners trading as T. M. Morgan and Co. at the Falcon Ironworks, Walsall, iron manufacturers. The liabilities were stated at 3000%, but the assets were not yet ascertained. On the same a meeting of the creditors of Edwin Onions, Horsley Heath Blast-Furnaces, Tipton, was held at Oldbury. The

amount due to unsecured creditors was 1876l., and to creditors fully secured 2490l. The assets consisted of stock-in-trade, which, however, was under distraint, and was insufficient by 150l. to discharge the claim. The only available assets were two iron boats, valued at 25l. An offer of 1s. in 1l. was made and accepted.

Mr. B. Wood, has started the Wordsley Foundry, near Stourbridge, which has been closed for some time. We understand he has very large orders for axle-boxes on hand for the East Indian Railway Company, India State Railway, and New South Wales Railways, and has within the last few days received an order from the Australian.

has within the last few days received an order from the Australian Government for 20 tons of railway castings per week, extending over

A quarterly meeting of the North Staffordshire Iron and Coal Masters' Association was held, on Thursday (Mr. Wragge in the chair). Trade was reported to be very dull all round. Orders for finished Iron were difficult to obtain in every department, the works being but partially employed, and the improvement anticipated as the quarterly meeting approached had not altogether failed to be realised. The pig-iron and ironstone markets were also inactive, while the sale of each had greenly failer off and rates had dropped. while the sale of coal had greatly fallen off, and rates had dropped. It was unanimously resolved that the wages of colliers, ironstonegetters, and banksmen be reduced 10 per cent. in 14 days from next Saturday, irrespective of what may be the usual making-up day at any colliery, so that the alteration in wages may take effect on the same days at each works.

TRADE OF THE TYNE AND WEAR.

-The Coal Trade has improved slightly during the past week, and the prospect, especially for the steam collieries, is certainly better; several steamers which have been detained for a long period in Swedish ports have arrived in the Tyne and Wear. The shipments of gas coals and coke from Tyne Dock, and other shipping places in those rivers, have been large during the past week. The exports to the Mediterranean and Spanish ports have been pretty numerous.

The demand for house coals for the Thames and coasting ports is The demand for house coals for the Thames and coasting ports is falling off, but the demand for home and inland use continues pretty strong. The demand for manufacturing coal continues good, but there is no change in the value of this coal. The steam coal trade is in a worse position than any other branch of the coal trade at present, as will be seen from the return of the accountants appointed in connection with the sliding scale for the miners' wages; 5d. per ton is a serious fall in the price of this coal, and the men must, of course, submit to reduced rates. The house-rent question continues to cause much dissatisfaction in the steam coal district, and the miners now threaten to repudiate the sliding scale arrangement unless the rent threaten to repudiate the sliding scale arrangement unless the rent question is settled.

The accountants appointed to inspect the accounts of sales of coal

The accountants appointed to inspect the accounts of sales of coal by the coalmasters in Northumberland and Durham have certified that the average selling price in Northumberland for the three months ending in February was 4s. 7.99d. per ton, being a decrease on the previous quarter of 5.29d. The rate of wages will, therefore, be reduced $2\frac{1}{2}$ per cent., in accordance with the sliding scale. The accounts for Durham show that the net average selling price of coal for the four months ending February was 4s. 8.66d. The rate of wages will therefore remain unaltered.

will, therefore, remain unaltered.

The Iron Trade has improved considerably this week. Prices are stronger, and there has been more enquiry. Shipments have been large, and this, combined with the advance in the price of pig-iron in Scotland, has stimulated the demand considerably. The total shipments of Cleveland pig for the month reached about 81,000 tons. The Baltic trade is now looked forward to, and fair shipments have been made to France and Belgium. The pic-iron trade is certainly been made to France and Belgium. The pig-iron trade is certainly more hopeful, and more iron is changing hands. Makers quote 40s. for No. 3 prompt. The finished iron trade continues dull, and there more hopeful, and more iron is changing hands. Makers quote 40s. for No. 3 prompt. The finished iron trade continues dull, and there is no change in quotations for bars, angles, or plates. There is an enquiry for 13,000 tons of pipes. The Chamber of Commerce at Middlesborough have been considering the question of the proposed new French tariff, and Mr. Kennedy from the Foreign Office met the Chamber a few days ago, when the views of the trade were put before him. The chief points pressed which should have attention in the new arrangement was that a high rate of duty should not be imposed on steel in the shape of ingots and blooms, of which there is an increasing export from Cleveland. The total make of pig-iron in Cleveland and Durham for the quarter ending March has been 650,000 tons, or about 20,000 tons more than the average of the quarters in last year, and as the exports for the same period have been considerably below the usual average the cause of the great increase in stocks is quite apparent. The decrease in the exports has been mainly caused by the severe weather, and a greater demand is now setting in for export. The rate of the shipments for the next few months will determine the probable course of the iron trade, the consumption locally having been tolerably steady. The number of furnaces now built are 166, and 126 are blowing, 10 more than in the corresponding month last year. New steel works are projected at Middlesborough; the projectors have acquired 22 acres of land near the Teesside Ironworks; there is a river frontage of 500 yards. Two local gentlemen are named as projectors of the new company. It is intended to make steel by the Thomas-Gilchrist process; it is also stated that Mr. Gilchrist himself will be connected with the company. At Middlesborough, on Tuesday, the iron market was rather quiet, but at the same time it was steady and firm, owing to the favourable

stated that Mr. Gilchrist himself will be connected with the company. At Middlesborough, on Tuesday, the iron market was rather quiet, but at the same time it was steady and firm, owing to the favourable condition of the stocks and the probable demand for shipments of pig-iron during the spring. Prices were better than on Tuesday last, but were not quite up to those obtainable on Friday. The general price of No. 3, for prompt delivery, was about 38s. 6d.; No. 4 forge, 37s. 6d. The price of warrants is about 1s. per ton over ordinary iron. Messrs. Connal's stocks to-day is 161,803 tons, an increase on the week of 2137 tons. That stocks of Cleveland iron should only increase 5039 tons with a make of 234,884 tons in a month is a matter for surprise. Of this quantity close upon 180,000 tons was Cleveland iron.

Cleveland iron The great increase has been in warrant stores, Messrs. Connal's ocks adding 11,534 tons in the month. Makers' stocks were con-

siderably reduced. The manufactured iron trade is quiet.

The Central Northumberland Railway continues to attract much attention, and the scheme is well supported by all classes in the county; but at the same time there are several schemes or modifications of the same scheme supported by sections of men in various localities. The landowners, who would benefit most by the formation of the railway, have not entered into the scheme with a liberal spirit. The Duke of Northumberland, the greatest land proprietor, offers land for the line at 35 years purchase. This is really monstrous, and unless the farmers and landowners come to an agreement as to some definite scheme, and agree to give up the land pecessary at a modedefinite scheme, and agree to give up the land necessary at a mode-rate, and also to support the scheme by subscribing liberally towards the formation of the railway in some shape, there does not appear to

ich chance of the line being formed at present. THE STEPHENSON CENTENARY.—An important meeting was held in Newcastle on Saturday for the purpose of considering the proposal to celebrate the centenary on June 9 next of the birthday of George Stephenson, the greatest improver of the locomotive engine. A large number of gentlemen attended, representatives of various public bodies, the Mayor of Newcastle in the chair. Present—Prof. Aldis; M. G. C. Greenwell, president of the North of England Institute of Mining and Mechanical Engineers; Mr. Bunning, secretary of the Coal Trade Office; &c. After an interesting discussion it was decided to recommend that there should be a public demonstration in Newcastle on June 9 next to celebrate the centerary of the y in machinery, cided to recommend that there should be a public demonstration in A500l. Placing the theorem of June 9 next to celebrate the centenary of the birth of George Stephenson, and it was further unanimously decided that the meeting was of opinion that there was no better way of doing honour to the name of Stephenson, and to perpetuate his memory in this district, than by erecting a building for the use of the University of Durham College of Physical Science, to be called the Stephenson College. On the same day at a general meeting of the members of the North of England Institute of Mining and Mechanical Engineers, held in the Wood Memorial Hall, this subject was brought before the meeting by Mr. Bunning, the secretary, and the announcement of the conclusion arrived at in the public meeting was received with much enthusiasm and on the motion of Mr. J. B. Simpson seconded by Mr. Bewick, it was decided that the Institute approves of the resolution taken by the public meeting, and pledges itself to

of the resolution taken by the public meeting, and pledges itself to assist in carrying it into effect.

Fall of a Meteorite.—We have seen this interesting piece of stone, which is now exhibited in the Museum in Newcastle. It fell near Middlesborough a few days ago, near the branch of the North-Eastern Railway, its fall being observed by a permanent way in spector and some workmen. Mr. Ellenor and three men heard the rushing sound caused by the descent of the stone, and the that when it entered the earth a short distance from them, and after a short search they found it in hole; it was warm. Prof. Herschell gave the following description of the stone:—"It is a beautiful perfect meteorite; shell-like in shape, measuring about 6 in. by 5 in., and 3 in. height, and weighing 3½ lbs." The grey basaltic stone of which it consists internally is swathed and enveloped in a thin black molten crust. He believes it to be a genuine meteorite of an exceptionally perfect description. The last recorded fall of a similar stone in England occurred in the year 1795, at Wold Cottage, in Yorkshire; but two falls of similar stones have occurred in Ireland and two in Scotland during the present century. and two in Scotland during the present century.

REPORT FROM DERBYSHIRE AND YORKSHIRE.

REPORT FROM DERBYSHIRE AND YORKSHIRE.

April 7.—Business at the ironworks in Derbyshire has undergone but little change of late, there having been no increase in the demand for pig. Still, the furnaces at Staveley, Sheepbridge, Clay Cross, Renishaw, and those in the Erewagh Valley are turning out the usual quantity of pig. But stocks are increasing, for there has been a declining demand for those brands in particular which are best adapted for the rolling of sheets and plates suitable for the Staffordshire mill owners. There is, however, a large quantity ab sorbed by the makers who have mills, forges, and foundries, as well as furnaces. Some heavy orders are in hand for mining machinery at the extensive works at Chesterfield, to which the agents and owners of mines in all parts of the world have been attracted during the last few years. At the extensive works at Dronfield some heavy orders have just been booked for steel rails for America, so that there is ensured for the hands pler ty to do for some months to come with the present contracts in hand alone. There is not quite so much being done in house coal; still, the demand, more especially for the London market, so far has kept up well. The Derbyshire colliery owners have a considerable advantage over those in the adjoining districts of the West Riding so far as regards the railway rate, having only to aver from 2. Let a 72, 34 per tan against a unjetom rate of owners have a considerable advantage over those in the adjoining districts of the West Riding so far as regards the railway rate, having only to pay from 7s. 1d. to 7s. 3d. per ton, against a uniform rate of 8s. 3d. per ton from South Yorkshire. The result is that Derbyshire and the adjoining districts in Nottingham provide two-thirds of all the coal that is forwarded by railway within the area of the metropolitan city dues. Steam coal is improving in request, and there is every appearance that before long there will be a marked increase in the shipments for foreign ports. There has been a marked falling off in enquiries for engine fuel, more especially for Lancashire and Cheshire. There is also a decline as regards gas nuts and small coal generally.

generally.

In Sheffield business taken altogether is looking better, more especially as regards the heavier branches. The rolling mills are kept well going, so that puddlers, hammernen, and rollers are well employed. The new composite plates for armour-clad war vessels are now being largely produced for our Government, and such being the case France, Germany, and Italy are sending for specifications, so as not to be behind the greatest naval power as regards the sheathing of their vessels. Thus England and English manufactures show their superiority as regards defensive armour against all others. Ordinary plates, sheets, and merchant iron are still in good request. Some large orders have been given out quite recently for Bessemer rails for American as well as other railways, but prices at which contracts are taken are said to be particularly low to what they have been. The competition, indeed, is remarkably keen, and the Sheffield makers are placed at a great disadvantage in comparison with those who have works close to our seaports. The railway rate from Sheffield, to Liverpool, Hull, and Grimsby is a serious matter, and efforts are now being made to have it reduced, and which in the long run would be to the advantage of the railway companies by the great increase of the traffic that would ensue. Cutlery manufacturers are favourably off for business, there being some good orders from America, as well as from Australia and the home markets. In South Yorkshire the miners have become more settled, and are now working steadily, but the trade, it may be said, is declining as regards house coal, and prices are anything but removed in and the same propositive and are more likely to companies. In Sheffield business taken altogether is looking better, more espe but the trade, it may be said, is declining as regards house coal, and prices are anything but remunerative, and are more likely to come down than otherwise. Steam coal is looking better, and with the early opening of the Baltic, which it is expected will take place before the end of the present month, a good trade is anticipated. Engine fuel is not in such good request, and the same may be said with respect to also and smudge, except what is required for the making respect to slack and smudge, except what is required for the making of coke, for which there is a good demand.

DEEP ROCK BORING MACHINE.—An extremely interesting operation is being at present carried on by the Hartlepool Gas and Water Company at West Hartlepool—the sinking of a series of deep boreholes through the magnesian limestone, which abounds in that locality, and is somewhat difficult to bore on account of the extremely hard and irregular nature of the strata. The object for which boring is persued is to obtain an additional supply of water for domestic service, in consequence of the rapidly extanding area of the Hartlepools. Previously this work has been effected by hand labour, but the directors of the company, desirous of keeping pree with the requirements of the district, determined, on the representations of their secretary (Mr. Newitt), to obtain a much larger supply than that offered by the small holes hitherto put down, and their engineer (Mr. Mossman) was instructed to take the matter in hand. After a careful consideration of the subject, it was decided to employ the steam apparatus known as the Cranston Deep Boring Machine, which is now in most satisfactory operation. The apparatus has been inspected by a number of engineers, the inventor, Mr. J. G. Cranston, of Newcastle-on-Tyne, who has supplied the machine, being present to explain its capabilities, with which all expressed themselves highly satisfied, and the Hartlepool Gas and Water Company's directors, who have purchased the machine, are in every way pleased with its successful working. with its successful working.

THE COAL PRODUCTION OF THE WORLD.—From an interesting collection of coal statistics—the Eight Annual Review of the Coal Trade—published by Mr. F. E. Saward, of the New York Coal Trade Journal, it appears that the extent to which the several countries contributed to the coal production of the world in 1879, the latest year for which figures are obtainable, was—Great Britain, 134,008,288 tons; United States, 59,808,398; Germany, 46,953,002; France, 17,104,485; Austria, 15,447,292; Belgium, 15,446,531; India, 4,000,000; Russia, 3,578,604; Australia, 1,750,000; Spain, 775,000; Japan, 750,000; Vancouver Island, 250,000; and China, Italy, Sweden, and Chili, 4,360,000. In Sweden, continues Mr. Saward the total out. Russia, 3,578,604; Australia, 1,750,000; Spain, 775,000; Japan, 750,000; Vancouver Island, 250,000; and China, Italy, Sweden, and Chili, 4,360,000. In Sweden, continues Mr. Saward, the total output of coal is not over 90,000 tons annually, but there is imported from Great Britain something over 1,000,000 tons annually; the figures for 1880 being 1,317,274 tons. In India the amount of coal raised varies a good deal from year to year with a supply of scaborne coal in the market, the latter depending very much on the amount of tonnage available. The supply of coals which had been imported from Australia to India during the last 20 years has nearly dwindled to nothing. The consumption in British India per annum in locomotives and factories is stated by one authority as being at present 1,000,000 tons, of which one-half was raised from Indian mines, the remainder coming from England, France, and Australia. Other authorities give 4,000,000 as the production of native coal. Italy produces perhaps 125,000 tons of lignite, and 95,000 tons of peat annually; beside this there is imported from Great Britain a million and a half tons of coal; the figures for 1880 were 1,531,009 tons. In Chili the coal is of a lignitic character, and amounts to a yearly business of 400,000 tons, of which 50,000 tons are exported. In addition to the home supply 150,000 tons are imported from Great Britain annually. Spain is reported to consume 1,500,000 tons lignite, while the imports average 750,000 tons; the exports during 1880 from Great Britain amounted to 895,239 tons. The production in 1874 in Japan was stated at 396,240 metric tons; and for 1875, 436,826 tons. We make an estimate of 600,000 tons as for 1879. In 1868 Japan exported 15,584 tons of coal, and 915 tons for ships' use, but in 1878 export of coal was 95,064 tons, with 111,785 tons for the use of

THE GREAT ZARUMA GOLD MINING COMPANY

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The celebrity of the Zaruma Gold Mines was noticed in last week's Mining Journal, and as the prospects of the property are not doubted to be excellent it is proposed forthwith to introduce to British capitalists a company—the Great Zaruma Gold Mining Company—with a view to secure their energetic development. The property consists of seven independent gold mines and one of quicksilver. These mines are situated in Ecuador and have an historical fame. The conditions on which the property has been acquired are singularly favourable, inasmuch as no consideration in cash will be paid, the vendor accepting deferred shares, which will receive no dividend until the shares about to be offered receive 10 per cent. in each year. As considerable interest will, under these circumstances, attach to all information bearing upon the position and prospects some extracts are subjoined from a report, printed in El Comercio (Guayaquil Journal), on the mines of Zaruma, by Dr. Teodoro Wolf, the Government Geologist:—

ogist:—
Knowing that I had studied these mines in detail by order of the Supreme the Suprement some friends expressed a desire that I should make a short public strength of the Suprement some friends of the Suprement

Knowing that I had studied these mines in detail by order of the Supreme lovernment some friends expressed a desire that I should make a short publication upon so interesting a subject.

It appears that I cannot respond to the desire manifested in a more convenient ay than by literally copying from a report to the Government such passages of geological journey through the province of Loja as refer to Zaruma. My position of geologist to the State will be a guarantee that it is not my inention to praise up or to serve particular interests, but only the public good of the country.

tention to praise up or to serve particular interests, but only the public good of the country.

My report will be objective, and everyone will judge according to it whether the expectations are well founded or not.

We arrived at Zaruma, and here a very vast field is open to us for the study of the mines, because all the land occupied by the town itself, and all the surroundings thereof, are undermined by the old mines, not one being exhausted.

All the old workings are executed without any technical knowledge, and commonly according to a very bad plan, which must necessarily have impeded the perfect working and the subterraneous works to a great extent, even rendering small works difficult at short depths.

Here, as in so many other things, is shown the general procedure of the ancient Spaniards, whose only object, it appears, consisted in enriching themselves in the shortest possible time, in bleeding and exhausting the country in every way, without thinking of its future and without any scruple of ruining it.

selves in the shortest possure more. In every way, without thinking of its future and without any scanner in every way, without thinking of its future and without any scanner. Happily they have not attained their object at the mines of Zaruma, because, as I have stated, far from being exhausted, it can be said that they are scarcely commenced, although in some parts the old workings will somewhat render the new methodical mode of working difficult.

The ancients commenced the working of a vertical vein by opening a gallery, commonly very narrow and low, always following the course of the principal lode. As, with few exceptions, they did not use timber, they necessarily had to preserve the quartz supports, so that the cavity might have sufficient resisting power, otherwise they very soon experienced a great crumbling away of the brittle earth of the decomposed porphyry, and they had to abandon the working and commence at a short distance another one of a like bad construction.

The working and commence as a size.

They never thought of penetrating into a lode systematically in all its height and thus it happens that the veins which are perhaps 300 metres in height, and run more than a league through the mountains, are only worked to the short height of from 2 to 3 metres, and to the length of 10 to 30 metres; all the rest is intact, and there is no reason to suppose that it is less rich than the little space worked.

is intact, and there is no reason to suppose that it is less rich than the little space worked.

Let us know the mines themselves, at least some of the principal ones.
The mines which from remote times have had the greatest fame are the mines of Sesmo. This name is borne by a small mountain on the north-east side of Zaruma, which is composed of a porphyrous earth highly decomposed, and it owes its preservation, it appears, only to the multitude of quartz lodes which cross it and most resist destruction.
The whole of the base and the skirt of the mountain towards the town are undermined by old workings, and some very celebrated ones also exist on the opposite side at greater height.

Unfortunately the most famous one, the richness of which is considered incredible, is choked up, and is, therefore, inaccessible. It is now proposed to drain the water out of it, so as to thereafter follow the course of the old lode of so much fame.

The adit which was opened for this purpose is not a "dead work," and it follows the course of an auriferous lode, wherefore it is a "fruitful mine." Nearly all the stuff which is taken from the adit is of use, and sufficiently rich in gold.

The adit which was opened for the problem of the stuff which is taken from the adit is of use, and sufficiently rich in gold.

The vein has a potency of a foot or thereabouts, and consists of a white quartz, at times somewhat roseate, grannlous, porous or cellular, which in its greatest cavities contains beautiful groups of rock crystal, and is exceedingly rich in pyrites (sulphide of iron).

The direction runs exactly from south to north, like almost all the lodes in this district, and dips with 70° to 80° towards the east.

The said vein is only 'a band or middle zone of a thick lode, or rather of a dike, which consists of a material sufficiently hard and of a dark verdigris colour, and is likewise rich in pyrites.

[We pass over in slence the minute description of the accessory minerals and of their transformation.]

In no other parts have I observed so rapid a decomposition of pyrites in vitriol, and without doubt it is for this reason that the mine bears the name of "Cayparrosa" (copperas).

It is easily understood how this property would be able to be made use of in the extraction of the gold, as it facilitates the crushing of the metal, and because it necessarily curiches it by a kind of concentration.

The Sesmo lode of which we are speaking is poor in accessory minerals. Copper ores are the principal, and nevertheless they are not in sufficient quantity to admit of their being worked, so that here gold is the only object of the working. It is said that some samples of the pyritiferous quartz assayed gave 13 and 14 ozs. per cajon (say 50 quintals), which would be an extraordinary richness; others 3 to 4 ozs. for the same quantity. I have assayed samples from the central zone of the vein (No. 1) and others of the dark green ore (No. 2), all being rich in pyrites. Nos. Is a not be would give approximately 6 ozs. per cajon, and No. 2, 4 ozs., or thereabouts.

I do not doubt but that in all those mines of Zaruma, the major portion of the gold is contained in the pyrites, and a much lesser portion in the qua

gave in gold 0 0097.

When the pyrities or pyritiferous mass is crushed, and is immediately subwhen the pyrities or pyritiferous mass is crushed, and is immediately subeted to amalgam, all the quantity of gold is not extracted. It is necessary to
calcine the ore before it comes into contact with the mercury, so that by calcination the sulphide of iron is transformed into red oxide, from which, for various reasons, the native gold is able to be separated with greater facility, and
this would have to be done not only in the small assays in the labority but also
in the extraction on a large scale, a measure which has not been observed
among the miners of Zaruma, and which, nevertheless, appears to me of very
great importance.

among the miners of Zaruma, and which, nevertheless, appears to me of very great importance.

Let a trial be made, and it will be seen how much the quantity of gold per "cajon" is increased. Of course this operation of calcining the stones is superfluous in the mines which do not contain pyrites or other sulphides, because there Nature herself has already transformed the sulphide into oxide.

The only metallurgic method of profitably working the ores, which, according to my thinking, can be supplied at the mines of Zaruma, is amalgamation (after calcining them as before stated); in washing too much would be lost on account of the extreme fineness of the gold dust, and smelting is still less practicable, except in the one case as in the other, when it might be desired to work at the same time coppar or any other metal abounding.

From the Sesmo runs a large series of mines in a southern direction through El Castillo, as far as the River Amarillo, of the which, at least, that of "La Bamba," "La Tostada," "Richilinga," and "La Aguada," still belong to the Sesmo system, and are, perhaps, ramifications of the Royal lode (the Sesmo to doe of which we have spoken is so called), although they do not contain pyrites, and are alone composed of quartz with a deal of oxide of iron.

It is known by tradition that La Tostada gives a Castellano and Bichilinga three times as much.

It is known by tradition that La Tostada gives a Castellano and Bichilinga three times as much.

The mines of Jorupe and Soroche, the Mina Grande, and that of Portovelo, which run lower down, present peculiarities which cause me to suppose that they belong to a separate system.

Very interesting is the mine Jorupe, which is still intact, inasmuch as the ancients did no more than uncover the lode and excavate it for a few metres; they afterwards abandoned it, for what reason it is not known.

We are not acquainted with the whole extent of the vein, but as far as can be seen the workable ores have at least 3 or 4 metres of potency. The lode is vertical, and runs in the direction S. to N. It is composed of many bands or parallel zones, whose thickness vary from I in. to I ft. One half is occupied by a vein of white quarts, containing a sufficient quantity of native copper in thin layers of dendritic forms; at both sides run branches of pyrites, zinc-blende, galena, always alternating with others of quarts.

As the metals are distributed with great irregularity through the gangue an assay which is not made with great quantities cannot give exact results as to the quantitative relations of the metals.

The qualitative analysis made with small samples showed that some zones contain gold and others do not, and that the galena (sulphide of lead) contains very little silver. The metal most abundant is zinc, likewise with indications of silver, and copper is found in a quantity which in my opinion would well repay working.

The mine has the fame of being very rich in silver, but without foundation,

it is superfluous to repeat what I have said about that one. It is almost certain that they lie in the same lode, or in its branches.

The Mina Grande is distinguished from all by the beautiful and regular disposition of its metals in vertical zones; but it has water in it, and it is difficult to visit it. A sample of pyritiferous quartz from this place gave gold 0'023, but it must be an exception, and not all the quartz will be so rich, because if it were the case it would give 20 cas, per cajou.

I must yet say some words about the mines of Biscaya. They take their name from the place where they are found, and which is the branch of the Cordillers of Chilla, which terminates on the north-west side of Zaruma, the mountain of Zaruma-Luran being situated in its extension.

In the summit of the mountains of Biscaya, on the northern side, are found the mounts of the abandoned mines. The lower one is called La Bomba de Biscaya, and branches out from where it begins, but none of the galleries go very far in.

The principal vein has almost a metre of potency, and a symmetrical and very regular structure (such as I described in the mine of Lowne.)

Biscaya, and branches out from where it begins, but none of the galleries go very far in.

The principal veln has almost a metre of potency, and a symmetrical and very regular structure (such as I described in the mine of Jorupe). From this vein run various branches in different directions. The gangue is auriferous quartz, and the mineral itself is composed of zinc-blende, auriferous and coppery pyrite, chalcopyrites, variegated copper, argentiferous galena, some subordinate product of decomposition of the said minerals and oxide of iron.

It is seen that variety is is not wanting, and in fact the ores of this mine are the finest I have seen in that region. I doubt not that in time this mine will again be explored, and although all the metals are found in workable quantities, under the local circumstances greatest attention must be bestowed upon gold or copper, and no regard be paid to zinc, lead, or even silver.

A rich and selected sample gave—gold, 0'006; silver, 0'004; copper, 5'74; zinc, 2'056, which would give more than 6 ozs. of gold and 430 pounds of copper se "cajon," but for the reason I indicated with respect to Jorupe, before undertaking new works in this mine some assays on a large scale ought to be repeated, in order to bring truer results, and thereby well founded expectations.

The copper mine called Is Chorrery de Biscaya, is also a good one.

repeated, in order to bring truer results, and thereby well founded expectations.

The copper mine, called La Chorrera de Biscaya, is also a good one.

[We omit here the lengthy description of this mine, only noticing that the assay of its auriferous quartz gave 5 ozs. of gold per cajon, and that it contains a sufficient quantity of copper.]

As I have before stated, it can be affirmed that not one is exhausted, and all, if worked on a rational and methodical system, and with all the sid of mineralogy and metallurgy, will prove a success.

Zaruma will one day occupy a great place in mining industry.

A spirit of enterprise, sufficient capital, and skilled engineering—these are the three requisites necessary to enable mining to take root, and be of benefit to the country and the nation.

The last lines contain a kind of prophecy; should this be fulfilled all would have reason to rejoice at the great progress of the country.

The exhaustive character of Dr. Wolf's report will afford sufficient proof that the mines are well worthy of consideration, for it will be seen that the value of the deposits of mineral is beyond question, whilst it may naturally be concluded that if the ancients could work them to great profits of far as the mechanical appliances at their disposal would permit, present knowledge with the advantage of powerful machinery, air compressors, rock-drills, and improved processes will facilitate the laying open of the mines to greater depth, and place an unlimited quantity of remunerative auriferous material within their reach. The company will commence operations altogether under most favourable auspices. gether under most favourable auspices.

FOREIGN MINING AND METALLURGY.

The Belgian iron trade remains in much the same state. There are some black clouds on the horizon, but, upon the whole, industry is well sustained. The adverse feature in the situation is the comparative absence of foreign orders. It cannot be denied, however, that there is still a great deal of work on hand. The steelworks are well occupied, and they have just obtained some important orders in Holland. On the other hand, they were beaten by German prices in an adjudication for axles which took place last week at Brussels. The Athens and Longwy Steelworks have just concluded arrangements with an English firm for the delivery to them of complete plant. The house of Tannet and Walker, of Sheffield, which recently equipped the Thy-le-Château Works, obtained this order. It is expected that the Northern of France Railway Company will shortly give out orders for the supply of 4000 carriages and trucks, and Belgian firms are hoping to supply a portion of this additional plant. Iron remains nominally at 5t. 4s. per ton in Belgium. The imports of iron minerals into Belgium in the first two months of this year were 140,708 tons, as compared with 104,420 tons in the corre-The Belgian iron trade remains in much the same state. There are

imports of iron minerals into Belgium in the first two months of this year were 140,708 tons, as compared with 104,420 tons in the corresponding period of 1880. The exports of rails from Belgium in the first ten months of this year amounted to 4710 tons.

The Belgian coal trade has not experienced much change. Producers have not much cause to complain; there has been little interruption in the demand, and the deliveries have been everywhere resumed with much activity. In the neighbourhood of Mons especially large quantities of coal which had gone into warehouse have been disposed of, and stocks have been reduced instead of increasing, as is usually the case at this period of the year. Stocks are more considerable in the neighbourhood of Charleroi than in any other district; the production at the same time has experienced no reduction. In the Liége basin considerable quantities of industrial coal are being delivered, while domestic qualities are going into stock. are being delivered, while domestle qualities are going into stock. There has been little change in prices. The imports of coal into Belgium from England amounted in the first two months of this year to 32,029 tons, as compared with 52,579 tons in the corresponding period of 1880. The exports of coal from Belgium to France in the first two months of this year amounted to 565,447 tons; the corresponding exports in the corresponding period of 1880 were 750,440

sponding exports in the corresponding period of 1880 were 750,440 tons.

In the French department of the Haute-Marne there is much activity in all the works, and consumers are pressing for early deliverries. The new orders received have not, however, been of much importance. Prices have remained without change. Rolled iron from coke-made pig has brought 7l. 12s. per ton; and mixed ditto 8l. 8s. per ton, with an augmentation of 4s. to 8s. per ton for re-assortments. No. 20 has sold at about the same rates as first-class merchants' iron. Iron wire has been readily disposed of. Orders have been well sustained for plates, and prices have been firmly maintained. The foundries have been generally well off, many orders having come to hand for castings for building purposes, pipes, &c. In the Longwy group prices of refining pig have been pretty well sustained; business has, however, been quieter in casting pig, the demand having somewhat declined. It is noticed that German firms have just offered dephosphorised plates in Paris at extremely low rates.

The managers of the Pennsylvania anthracite coal mines are apparently continuing this year the policy of last year, that of stopping the output occasionally for three days per week in order to keep the supply well within the demand. Work was stopped by general agreement during the last three days of each of the past two weeks. The measure is attributed to a slackening in the demand for certain descriptions of coal. The trade is said to have been latterly very dull, probably in consequence of consumers deferring their orders as much as possible in the hope that easier terms may be obtained as spring advances. Coal has recently been sent to the markets in excess of

probably in consequence of consumers deferring their orders as much as possible in the hope that easier terms may be obtained as spring advances. Coal has recently been sent to the markets in excess of the demand, and this has had a depressing influence. The weakening tendency has increased by efforts to press sales. The output of coal shows also a decided increase against last year. The total output for the year up to March 12, to which date the statistics before us are compiled, was 8,877,546 tons, against 3,713,075 tons for the same period last year. The output of bituminous coal shows also a decided increase, the figures being 770,140 tons, against 676,561 tons last year. Apart from their bearing upon the general course of trade in the United States, the figures are of course interesting in relation to the

United States, the figures are of course interesting in relation to the finances of the American coal railroads.

The success of the Thomas-Gilchrist process of making steel from inferior iron ores bids fair to effect a change which will be little less than a revolution in the fortunes of the Cleveland district. It is well known that the rapid substitution of steel for iron in recent years had greatly aggravated the distress arising in that part of the country from the bad state of trade. The Cleveland ironstone could not be from the back state of trade. The Cleveland Profiscone could not be made into steel. Now the operation is being successfully accomplished, and one firm alone is producing about 3000 tons of steel per week from local ores. It is thought not unlikely that the new process will eventually be generally adopted in the production of English steel, and that the importation of Spanish hematite ore will fall to very small proportions. At present not less than 2,634,000 tons of foreign iron ore are imported out of a total of 20,000,000 tons a year which, according to returns just issued by the British Iron Trade Association. rorking.

The mine has the fame of being very rich in silver, but without foundation, cause silver ores are not discovered with the naked eye, nor with a lens, and he little silver resulting from the assay is to be attributed to the gold which leaves contains it combined, or to the galena.

Speaking generally, I cannot convince myself of the existence of good silver nines at Zaruma, and I believe that this metal always plays there a very suborninate part in the mines of gold and copper.

The ores of Mina Grande and of Pertorelo are so alike to those of Jorupe that

cost of making steel by the ordinary Bessemer converter from hema-tite ore and by the new process, but it is clearly a great gain to be able to use profitably by means of the latter a raw product of our own soil, which seemed likely not long ago to become of extremely

little value.

Advices from Brussels state that contracts have just been let for 4000 tons of steel rails and 353 tons of accessories for the Netherlands State Railways. The lowest tender was that of the Anglian Steelworks Company—34,6731. Messrs. Bolckow, Vaughan, and Co. (Limited) tendered at 37,8711.

(Limited) tendered at 37,8711.

The receipts of the Suez Canal for the third decade in March, which have just been made known, exceeded the receipts for the corresponding period last year by 40001., and were in fact the largest on record. The receipts for the month amounted to 187,6001. The share quotations, however, have continued subject to fluctuations after the recent rapid upward movement.

Registration of New Companies.

The following joint stock companies have been duly registered:-

THE WEAR VALLEY FOUNDRY AND ENGINEERING COMPANY The Wear Valley Foundry and Engineering Company (Limited).—Capital 8000L, in shares of 50L. To carry on the trade of brass and iron founders, general engineers, in connection with a certain agreement entered into. The subscribers are—G. Morson, Crook, 15; J. G. Chapman, Middleton St. George, 14; C. Morson, Crook, 7; F. Morson, Crook, 7; W. Webb, Crook, 7; W. A. Wooler, Sadberge Hall, 50; H. Kellet, Darlington, 29; W. L. Macfeggan, Darlington, 30; G. Morson, junior, Crook, 1.

EAGLE MANUFACTURING COMPANY (Limited).—Capital 15,000L, in shares of 5L. To acquire and work engines and other works, foundries, mining grounds, and quarries, collieries, stone, salts, and other minerals. The subscribers (who take one share each) are—F. A. Withey, Liverpool; P. Evans, Liverpool; W. Payne, Birkenhead; T. Nickels, Brok Ferry; R. S. Walker, Liverpool; A. Williams, Tranmere; W. Reeves, Liverpool.

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CLAYTON AND COMPANY (Limited).—Capital 28,0001. in shares of 101. To brew, manufacture, and sell all kinds of non-intoxicating beverages. The subscribers (who take one share each) are—H. Robson, 16, Throgmorton-street; R. W. Kitchen, Peckham; T. Carver, Manchester; G. W. Railton, Alderley Edge; R. Boyd, junior, Glasgow; R. H. Joynson, Bowden; W. M. Crump, Manchester.

The West Devon Brick and Terra-Cotta Company (Limited).—Capital, 10,0001., in shares of 101. To carry on the business of a brick, tile, pipe, and terra-cotta manufacturing company. The subscribers (who take one share each) are—L. H. Thomas, Beckenham; R. S. Bendall, 19, Old Change; T. Clark, Clapham Common; H. W. Clemow, 19, Kennington Park Road; L. Goldberg, 9, Seethinglane; C. Taylor, Tottenham; F. Harrison, 18, King's Arms-yard.

The Polychromatic Simultaneous Printing Company (Limited). Capital, 100,0001., in shares of 11. To carry on the trades of printers, lithographers, engravers, artists, stationers, &c., in connection with certain acquired patents. The subscribers are—H. Cooper, 48, Bunhill-row, 500; D. T. Naad, 49, Redcliffe-square, 500; C. T. Ritchie, 6, Lime-street, 500; A. B. White, 9, Gracechurch street, 500; A. Smith, 6, Lime-street, 250; W. G. White, Crayford, 250; J. A. Worthington, 323, Vauxhall Bridge-road, 130.

The Mersey Salt and Brine Company (Limited).—Capital 250,0001., in shares of 101. To supply brine and manufacture salt and other chemical products, and deal or sell, or otherwise dispose of same. The subscribers (who take one share each) are—A. T. Trehearne, 3, Clifton-terrace; A. M. Watson, Chelsea; J. Levich, Richmond; G. Mountier, Morton; H. Osborne, New Wandsworth; J. R. Gindle, 2, Glengall-terrace; G. W. Hannan, 41, Threadneedlestreet.

wood Pavement Construction and Maintenance Company (Limited).—Capital 100,000l., in shares of 1l. To carry on the business of wood and other pavement manufacturers, paviors, and contractors. The subscribers (who take one share each) are—Lord Headley, Carlton Club; E. J. Charter, 2l, Hogarth-road; G. Stanley, 4l, Gloster-terrace; D. Dunean, 7, Poultry; A. W. Wood, 7, Poultry; A. J. Davis, 7, Poultry; H. L. Corlett, 16, Cornwall-road.

The Foreign Light Improvement Company (Limited).—Capital 15,000l., in shares of 10l. To manufacture, fit, and maintain any appliances for the supply of an illuminating power. The subscribers (who take one share each) are—Lord Cochrane, 37, Ennismore Gardens; James Liveley, 9, Victoria Chambers; John Liveley, 105, Pali Mall; C. E. Wilson, 65, Basinghall-street; G. Edwards, Cheltenham; E. Heasman, Peckham Rye; L. Sterm, 9, Victoria Chambers.

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The Briton Ferry Coal and Pottery Company (Limited).—
Capital 10,000%, in shares of 10%. To acquire by purchase or otherwise any estate or interest in any lands, collieries, clay and pottery works, mines, quarries, clay pits, furnaces, wharves, ships, barges, machinery, and other property in England and Wales, and to carry on the business of colliery proprietors, potters, miners, quarry masters, smelters, and ship owners, &c.; and adopting and carrying out the provisions of a certain agreement relating to the acquisition of a property situated in the county of Brecon. The subscribers (who take one share each) are R. Tenant, Barnet; C. R. Congell, Neath; J. R. Tenant, Neath; M. P. Formby, Briton Ferry; C. E. Peel, Swansea; A. R. Batley, Briton Ferry; A. K. Mackinnon, I, Gloster-street. Gloster-street.

THE IMPERIAL LONDON BISCUIT COMPANY (Limited)

J. Gloster-street.

The Imperial London Biscuit Company (Limited).—Capital 100,000, in shares of 51. To establish and carry on a business of wholesale and retail bakers and manufacturers, and sellers of plain and fancy biscuits, cakes, &c. The subscribers (who take one share each) are, J. J. Minchin, 9, Clydesdale-road; H. E. S. Hall, 118, Bishopsgate-street Within; C. Wilson, 9, Mansion-place; E. Bayley, 42, Newington Causeway; G. Giles, 41, Norfolk-road; J. G. Minchin, 19, George-street; H. Hughling, 9, Gracechurch-street.

The Wynaad District Gold Mining Company (Limited).—Capital 100,0001, in shares of 11. To adopt and carry into effect an agreement made between W. B. Smith, of the one part, and George Twynam, as trustee for the company. To purchase or otherwise acquire lands, estates, and properties in India or elsewhere, to improve, cultivate, and develope the same, and to work gold mines, minerals, and mining rights and water rights To erect, establish, construct, or acquire all works, buildings, houses, tanks, machinery, apparatus, &c., which may be found necessary in prosecuting the purposes of the company. The subscribers (who take one share each) are—M. B. Rochfort, East Dulwich, esquire; S. Banning, 31, Isliden-road, accountant; A. C. Kitchener, 84, Buckingham-road, agent; F. Wingrove, 37, St. Peter's-square, esquire; J. R. Hannam, Southend, gentlemen; J. Cowen, 7, Albermarle-street, esquire; R. Upton, North Finchley, captain. Five of the first directors may be appointed by the subscribers; the total number must not exceed seven or be less than three.

the subscribers; the total number must not exceed seven or be less than three.

The Anglo-Bilbao Steel Ore Company (Limited)—Capital 80,000%, in shares of 1%. To carry out an agreement made between the Syndicate of Financiers (Limited) of the first part, W. McNaught of the second, and S. Banning of the third. To acquire a lease of a mineral concession with all its rights and privileges, of the "Josepha Ironstone Mines," situate on the River Nervion, near Bilbao, Spain, and any other concessions, mines, mining rights, lands, and quarries producing iron ore or other minerals in Spain or elsewhere. To work and mine the ores, minerals, or other products, and purchase, sell, and deal in these and other substances derived by any mining and quarrying operations of the company or of other undertakings. The subscribers (who take one share each) are—N. Woodward, 38, 8t. Oswald's-road, director of a public company; G. Twynam, 92, Guild-

scribers (who take one share each) are—M. Shepherd, 16, Albert Mansions; J. H. Sevier, I, Mopeth-terrace; W. G. Woodman, East-lake; T. Davies, 4, Granville-square; G. W. Usil, Wandsworth; A. J. Millett, New Wandsworth; E. L. Graham, 7, Park-road.

THE BOBEGA COMPANY (Limited).—Capital 200,000/L, in shares of 5/L. The purchasing and carrying on of the business belonging to R. Banks Lavery, in London and the provinces. The subscribers (who take one share each) are—Lord de Zouche, 5/3, Albermarle-street; Lord D. Godolphin Osborne, Army and Navy Club; E. T. Wolseley, 38, Mount-street; A. B. Cunningham, 68, Mark-lane; R. Fry, 49, St. James's-street; J. Leigh, Manchester; O. Green, 3, Mitre Court Chambers. Court Chambers.

HOPE MOUNTAIN SILVER-LEAD MINING COMPANY (Limited).—
Capital 30,000*l.*, in shares of 1*l.* To carry into effect an agreement made between George Francis and E. J. Coates of the one part, and B. G. Newbigging of the other part. To acquire the leases of, and work, sublet, or lease certain mines, veins, lodes, or deposits of lead and lead ore, and all other metals and metallic ores, and certain mineral and fossil substances upon an estate stipated on Hope and lead ore, and all other metals and metallic ores, and certain mineral and fossil substances upon an estate situated on Hope Mountain, in the county of Flint, North Wales. The subscribers (who take one share each) are—E. J. Coates, Reform Club, merchant; G. Francis, 20, Newgate-street, M.E.; J. A. Gould, Conservative Club, gentleman; M. Herslop, Hammersmith, M.E.; A. P. MacKwen, Reform Club, zentleman; R. E. Newbigging, Wanderers' Club, gentleman; H. F. Morgan, Wanderers' Club, gentleman. The subscribers will appoint the first directors; the qualification of a director other than a subscriber is fixed at 25 shares.

THE RED RIVER VALLEY, MINNESOTA, LAND CORPORATION (Limited).—Capital 1,000,000/., in shares of 10/. To carry on all operations connected with a land company. The subscribers (who take one share each) are—Sir W. H. Drake, 10, Clanricarde Gardens; Lord Ashley, 29, Chester-square; R. L. Rose, 2, Royal Exchange; E. H. Clarke, Enfield; Lord W. Campbell, 4, Stanhope Gardens; F. A. Lloyd, 2, Great Charles-square; H. T. Norton, 24, Coleman-street.

ALDERSHOT GRAND HOTEL (Limited).—Capital 50,000l., in shares of 10l. To establish and carry on one or several hotels at Aldershot. The subscribers are—T. E. Byrne, Aldershot, 50; General W. F. Nuthall, Baron-court, 10; M. F. Napier, Fulham, 10; H. Wells, Aldershot, 10; E. Martin, Aldershot, 10; G. Edwards, 68, Brompton-road, 1; G. Wells, Aldershot, 10.

Addershot, 10. M. March, Attershot, 10; G. Rawards, 68; Bromptonroad, 1; G. Wells, Aldershot, 10.

The Nottingham Real Estate Investment Company (Limited).—Capital 100,000l., in shares of 10l. To carry on a land investment business of a local nature. The subscribers are—C. J. Cox,
Nottingham, 350; R. Dennett, Nottingham, 350; H. Lewis, Nottingham, 350; J. P. Coy, Nottingham, 50; M. Lewis, Nottingham, 50; J.
Bright, Nottingham, 50; F. Tugle, 5, Whitehall, 50.

THE ATLANTIC EXPRESS STEAM NAVIGATION COMPANY (Limited).—Capital 2,500,000l., in shares of 20l. To carry on a shipowner's business in all branches. The subscribers are—Lord Dunraven, Putney, 50; T. Reoves, 144, Leadenhall-street, 50; R. Antrobus, 27, Eccleston-square, 50; J. A. Steel, 5, East India Avenue, 50;
A. R. Vivian, 26, James-street, 50; A. Macgregor, 1, East India
Avenue, 50; J. Lock, 56, Netlewood-road, 1.

TELEPHONE MANUFACTURING AND MAINTENANCE COMPANY
(Limited).—Capital 250,000l., in shares of 5l. To manufacture, construct, work, sell, and deal in telephones and all appurtenances connected therewith. The subscribers (who take one share each) are—

nected therewith. The subscribers (who take one share each) are— J. Byles, 26, Tavistock-street; E. Lane, 20, Bucklersbury; A. W. Rose, 11, Queen Victoria-street; T. Barnes, 88, Richmond-road; P. E. Maitland, Barnsbury; C. Bennett, Walthamstow; H. Green,

Clapham.

THE SHAW KILNS COMPANY (Limited).—Capital 20,0001., in shares of 51. To purchase and continue an established business of brick, tile, and pipe makers, &c., in Berks. The subscribers (who take one share each) are—E. Wilson, Newbury; W. G. Adey, Newbury; J. H. Lucas, Newbury; D. Rojnes, Newbury; D. Dolby, Newbury; J. Fleet, Newbury; C. Lucas, Newbury.

THE ELECTRIC LIGHT AND POWER GENERATOR COMPANY (Limited).—Capital 150,0001, in shares of 11. To create and produce electricity, magnetism, and other agencies for the purpose of lighting thoroughfares, streets, public buildings, &c. The subscribers (who take 250 shares each) are—Admiral Inglefield, 99, Queen's Gate; W. Crookes, 7, Kensington Park Gardens; H. T. M'Neale, 3, Elm Park Gardens; W. Low, 22, Rowland Gardens; J. D. Pinder, 3, Fenchurch Avenue; R. C. Cannon, Richmond; J. G. Jebb, 16, Lancaster church Avenue; R. C. Cannon, Richmond; J. G. Jebb, 16, Lancaster

THE GOLD MINING TRUST COMPANY (Limited).—Capital 250,0001. in shares of 17. To raise money by the issue of shares or debentures, and invest the amount thereof in the shares, stocks, bonds, debentures, or other securities of any gold or other mining company, railtures, or other securities of any gold of other mining company, ran-way, tramway, gasworks, waterworks, docks, telegraphs, &c. The subscribers (who take one share each) are—R. Hills, 78, Coleman-street; F. Mason, 1, Pinner's-court; F. Hicks, West Kensington; H. G. Lawson, Stoneham; M. McGregor, 3, Wilberforce-road; F. W. Summers, 6, Moorgate-street; S. Burstall, Oriental Club.

MINING SURVEYS, AND THE VARIETIES IN THE MAGNETIC NEEDLE.

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MAGNETIC NEEDLE.

In a recent article in the Journal we drew attention to the various systems of taking surveys in mines, and the variation in the magnetic needle when adopted for that purpose. How those variations are caused is still a moot point amongst mining engineers, as well as our ablest astronomers and phycicists, and our attention has been called to the subject with a view to elucidating so important a matters. Still, we are unable to throw any light upon so important a matter further than giving the views of the most eminent men who have paid any attention to the matter. In taking observations with the needle the weather, no doubt, was different at one time from another, and this difference would, in all probability, have a tendency to a variation of the needle from the true meridian. It is also admitted there was a great difference between the observation taken on one day and that observed on another. The atmosphere, no doubt, affected the needle, and one eminent mining engineer states that oxygen being a component part of it attracted the needle. On the contrary nitrogen, another atmospheric component, had no action whatever in the matter, whilst the heat of the sun was considered to have a great effect upon the compass, and then the great thing to be ascertained was the variation of the compass from a certain line. In surveying with the compass, and to ensure anything like accuracy, they had to place an object at each end of the base line of survey, with the compass in the centre, and take the bearing of that line. Sometimes, however, it was found that both objects could not be seen in the straight line, and then, of considered to have a great effect upon the compass and to ensure anything like accuracy, they had to place an object at each end of the base line of survey, with the compass in the centre, and take the bearing of that line. Sometimes, however, it was found that both objects could not be seen in the straight line, and then, of considered to have

use of, so long as the water is kept flowing or confined in such pipe or channel and not allowed to escape out of the same.

The inventors not comprehending the fact that the water in the return and ascending pipes will represent back pressure in their machinery, state that they are enabled to take advantage of the natural law which causes all liquids when confined in suitable channels to rise to the level of the source of supply, or to the height equal to the pressure or nearly so, where an accumulator is used and as lead the

A meeting of members was held at Stoke-on-Trent on Monday, Mr. John Brown, the President, occupying the chair. Mr. G. A. Mitcheson, colliery manager, Longton, was elected an ordinary member, and Mr. Edw. B. Wain, Derby, a student of the Institute. In accordance with notice, the Council of the Institute were empowered to alter Rule X1., so that the meetings may be held on other days than the first Monday in alternate months. It was explained that the alteration of the rule was proposed so that meetings of the Institute would not clash with those of the South Staffordshire and East Worcestershire Institute. Mr. Haines, the secretary, read a paper by Mr. J. A Ramsay, on Ventilating and Working Collieries in Steep Measures. The paper was a very voluminous one, and was illustrated by diagrams. by diagrams.

SOUTH STAFFORDSHIRE AND EAST WORCESTERSHIRE INSTITUTE OF MINING ENGINEERS.

INSTITUTE OF MINING ENGINEERS.

The mouthly meeting of members was held on Monday in the Mining Museum, Dudley, Mr. Thomas Brettell, President, occupied the chair, and Mr. Farnworth the vice-chair. There were also present among others, Messrs. H. Johnson, G. Jones, D. Rogers, Treglown, R. Latham, W. North, Wardle, Pasfield, and Alex. Smith, M.I.C.E., secretary.—Mr. Stephen Skidmore, mining engineer, Bilston, was unanimously elected a member.—The Secretary explained that, according to instructions, he had written to Mr. Campbell, the author of a pamplet on Mutual Insurance between coalmasters and colliers, for copies to distribute among the members of the Institute. Mr. Campell replied that the pamphlet was nearly exhausted, but that he was at work on a revised edition, and copies of that should be sent. A long discussion on insurance then followed.—The Secretary held that it could only be successful by all being joined together in one common insurance, and, therefore, it was their bounden duty, as mining engineers, to see that the advantage of mutual insurance was made plain to the mining world of their district.—Mr. W. G. Davies then read a paper in favour of masters and men joining in assuring against accidents by subscribing to the terms of old and well established insurance offices.—The Secretary thought the term re-insurance, mentioned in the literature on the subject, should mean the joining together of all mutual insurance societies for protection; in fact, amalgamation.—Mr. Davies doubted the capabilities of local mutual societies of masters and men to stand the strain of great accidents.—Mr. A. Smith held that insurance societies on the mutual principle were the best.—Mr. Davies held that, although Northumber. dents.—Mr. A. Smith held that insurance societies on the mutual principle were the best.—Mr. Davis held that, although Northumberland had met the calamity of Seaham, yet with such drains upon it, and the average pay for widows and children, he was afraid it would not hold its own.—The Vice-President showed that the 30,000l. which Northumberland had to find for Seaham would not all be wanted at once and the funds and interest would go on accumulating whits. Northumberland had to find for Seaham would not all be wanted at once, and the funds and interest would go on accumulating which the claims were being paid.—After considerable more discussion, in which Mr. Parton advised that their district should not loose its hold upon their tangible scheme until something better was presented, and Mr. Johnson advocated rest until masters and men were settled, it was unanimously agreed to invite Mr. Campbell to attend and deliver a lecture on the subject, and that the masters' and colliers delegates should be invited to attend.—In reply to questions it was shown that the Boiler Rules Committee were at work, and now that they thoroughly understood the scope of their powers the result would soon be made known.—A hearty vote of thanks was passed to Messrs. Tangye Brothers for an exquisite drawing of their pumpingengine, and Mr. Treglown responded.—A vote of thanks was also passed to the Boiler Rules Committee and to Mr. Wardle for a box of fossils and a promise of a paper on the sinking from which they came. fossils and a promise of a paper on the sinking from which they came.

THE MANUFACTURE OF MINING MACHINERY. THE BROAD OAK WORKS, CHESTERFIELD.

Of late years few establishments have made greater progress than those of Messrs. OLIVER and Co (Limited), Chesterfield, who have attained a high reputation for the production of almost every description of mining material. Situated in the heart of one of the finest inland coal districts in the kingdom, and near the lead mines of Derbyshire, which are about the oldest we have, the Broad Oak Works have turned out nearly all kinds of machinery and appliances. description of mining material. Situated in the heart of one of the finest inland coal districts in the kingdom, and near the lead mines of Derbyshire, which are about the oldest we have, the Broad Oak Works have turned out nearly all kinds of machinery and appliances required in the carrying on of metalliferous as well as coal mining, including ordinary drawing and other engines, air compressors, ventilating fans, cages, as well as Schram's patent direct-acting rock drill and improved direct-acting air compressors, supports for driving and sinking, as well as coal-cutting machines, for which Messr. Oliver and Schram have taken out a patent. Air compressing machinery for mining purposes is now making marked progress, but rot so much can be said with respect to coal-cutting machines. Having visited the works some time since our attention was again recently called to them by a kindly notice of them which appeared in a local journal. We well recolled the old works, known as the Victoria Foundry, where we called with respect to some patent machinery on the occasion of our visiting the Sheepbridge Works, a notice of which appeared in the Journal, and now we find that the company have on the stocks some large winding-engines for a new colliery being sunk by the Sheepbridge Company. The present works were built about ten years ago, and stand out conspicuously close to the Midland Railway, extending in length upwards of 200 yards. The principal foundry is a large one, fitted up with all the modern appliances. The fitting shops comprise a range of buildings 300 ft. long by 80 ft. wide, and for working purposes there are several travelling cranes driven by steam power for taking the heavy material to the various machiners for drilling, slotting, &c. The miths' shops are 200 ft. long, and there are boiler-making sheds fitted up with Tweedle's hydraulic machinery for rivetting, which does the work formerly executed by hand with great expedition and accuracy. There are also carpenters' and fitters' shops, with saws driven b

mining machinery, or where the appliances for that purpose are so complete; for there is nothing that is necessary for carrying on mining operations of every description that cannot be produced at the Broad Oak Works, Chesterfield, which is the centre of, and indeed

the capital of, the Derbyshire mining fields.

TREATING BITUMINOUS SHALES.—According to the invention o Mr. WILLIAM AYBTON, of Ormskirk, he grinds the shales in water by means of a suitable machine, such as a mortar mill, until the whole is brought to about the consistency of stiff paste. He then removes the ground shale from the mortar mill and throws it into a pug mill, into which a stream of water is allowed to flow. By the action of the pug mill the ground shale is thoroughly mixed with and diluted by water, and the mixture as it flows from the said mill is directed rise to the level of the source of supply, or to the height equal to the pressure, or nearly so, where an accumulator is used, and so lead the pressure, or nearly so, where an accumulator is used, and so lead the pressure, or nearly so, where an accumulator is used, and so lead the pressure, or nearly so, where an accumulator is used, and so lead the pressure, or nearly so, where an accumulator is used, and so lead the pressure, or nearly so, where an accumulator is used, and so lead the pressure, or nearly so, where an accumulator is used, and so lead the pressure, or nearly so, where an accumulator is used, and so lead the pressure, or nearly so, where an accumulator is used, and so lead the pressure, or nearly so, where an accumulator is used, and so lead the pressure, or nearly so, where an accumulator is used, and so lead the pressure, or nearly so, where an accumulator is used, and so lead the pressure, or nearly so, where an accumulator is used, and so lead the pressure, or nearly so, where an accumulator is used, and so lead the pressure, or nearly so, where an accumulator is used, and so lead the pressure, or nearly so, where an accumulator is used, and so lead the pressure, or nearly so, where an accumulator is used, and so lead the pressure, or nearly so, where an accumulator is used, and so lead the pressure, or nearly so, where an accumulator is used, and so lead the pressure, or nearly so, where an accumulator is used, and so lead the pressure, or nearly so, where an accumulator is used, and so lead the pressure, or nearly so, where an accumulator is used, and so lead the pressure, or nearly so, where an accumulator is used, and so lead the pressure, or nearly so, where an accumulator is used, and so lead the pressure, or nearly so, where an accumulator is used, and seed the pressure, or nearly so, where an accumulator is used, and seed the pressure, or to flow. By the accountant, or the ground shale is thoroughly mixed with and d

The precipitate obtained in the second or third and following tank is silicate of alumina, sufficiently pure for use in the various manufactures in which china clay is used. In some cases he adds a little alkali to the water in which he grinds the shale. He does not limit himself to the apparatus hereimbefore described, the essence of this part of his invention consisting in separating the oily and colouring matters from the silicate of alumina contained in bituminous shales by levigating them and washing the product. The invention consists by levigating them and washing the product. The invention consists further in the use of the silicate of alumina, obtained as hereinbefore described, as a substitute for the whiting or china clay ordinarily used as an ingredient of the composition used in the manufacture of japanned table baize, American leather cloth, and in analogous manufactures.

PROVINCIAL STOCK AND SHARE MARKETS.

CORNISH MINE SHARB MARKET .- Mr. S. J. DAVEY, mine share CORNISH MINE SHARB MARKET.—Mr. S. J. DAVEY, mine share-tlealer, Redruth (April 7), writes:—The shares chiefly dealt in during the week in our market are Carn Brea, East Pool, Wheal Agar, South Frances, Dolcoath, and Tincroft. Wheal Agars advanced from 9 to 11, but are 10 to 10\(^1\) to-day. Carn Breas close at an advance of 2\(^1\) on the week; East/Pools, \(^1\); New Cook's Kitchens, \(^1\); and West Kittys, \(^1\); and West Kittys, \(^1\); wheal Peevors and Pedn-an-dreas have declined. Market is inactive to-day, and prices are as follows:—Blue Hills, \(^1\) 3\(^1\) to \(^1\); East Pool, \(^1\)5\(^1\); New Cook's Kitchens, \(^1\); at 13\(^1\); Cook's Kitchens, \(^1\) to \(^1\); Dolcoath, \(^6\)6\(^1\); East Pool, \(^1\)5\(^1\); to \(^1\)4\(^1\); Point Busy, \(^1\)4\(^1\)5\(^

Boys, 2½ to 2½; Wheal Grenville, 5½ to 9½; Wheal Jewell, % to ½; Wheal Pleusia, 1½ to 1½; Wheal Umy, 2½ to 3.

— Mr. 18 to 19; Wheal Kitty (8t. Agnes), 2½ to 2½; Wheal Plussia, 1½ to 1½; Wheal Umy, 2½ to 3.

— Mr. J. H. RENVADLOS, stock and share broker, Redruth (April 7), writes:—A good steady business doing in all the leading mine shares, including Carn Breas, Dolcoaths, East Pools, and Agars. Phoenix United, West Frances, and South Frances shares also in demand, but the latter closes rather weaker. Following are closingquotations:—Blue Hills, 3 to 3½; Carn Brea, 125 to 133; Cook; Kitchen, 12 to 12½; Dolcoath, 5½ to 5½; East Pool, 36 to 36½; Gunnislake (Clitters), 4 to 4½; Levant, 6 to 8; Marke Valley, 1½ to 1½; Mellamear, 5 to 5½; New Cook's Kitchen, 6 to 6½; North Busy, 1 to 1½; Mellamear, 5 to 5½; New Cook's Kitchen, 6 to 6½; North Busy, 1 to 1½; Mellamear, 5 to 5½; New Cook's Kitchen, 6 to 6½; North Busy, 1 to 1½; Mellamear, 5 to 10; South Corfuy, 9 to 9½; South Gardon, 60 to 65; South Condurrow, 9½; Dolco 10; South Corfuy, 9 to 9½; South Gardon, 60 to 65; South Condurrow, 9½; Trugo, 1½ to 1½; West Foldice, 4½ to 4½; West Frances, 13 to 13½; West Peevor, 16½ to 17; West Foldice, 4½ to 4½; West Seton, 21 to 23; West Tolgus, 30 to 35; Wheal Agar, 10 to 10½; Wheal Basset, 5½ to 6; Wheal Boys, 2½ to 2½; Wheal Comford, 3½ to 3½; Wheal Grenville, 6½ to 9½; Wheal Boys, 2½ to 19½; Wheal Freesian, 1½ to 1½; Wheat Peevor, 18½ to 19½; Wheat Peevor, 19½; Wheat Peevor, 19½ to 69; South Condurrow, 9½ to 9½; Bouth Peevor, 19½ to 69; South Condurrow, 9½ to 6½; Roth Busy, 20; to 25s. Penhalls, 1½ to 2; Penhanderas, 3½ to 59½; Bast Bostallack, 1½ to 2; Carn Brea, 13

to 18½; Wheal Kitty, 2½ to 2½; Wheal Prussia, 1½ to 1½; Wheal Uny, 2½ to 3; West Kitty, 3½ to 3½.

— Mr. M. W. BAWDEN, Liskeard (April 7), writes:—The mining market has been less active during the week for most of the leading shares, and prices have sightly receded. Phenix United in good demand at an advance, with large buyers, in anticipation of the satisfactory statement of accounts, with dividend and report, to be presented at the meeting, to be held on the mine on April 20. Subjoined are the closing prices:—Bedford United, 2½ to 2½; Carn Brea, 131 to 132; Gunnislake (Clitters), 4 to 4½; Cook's Kitchen, 12½ to 13; Dolcoath, 55½ to 57; Devon Consols, 11½ to 12; Devon Great United, 1½ to 13; Cooker Miller, 12½ to 13; Dolcoath, 55½ to 57; Devon Consols, 11½ to 12; Devon Great United, 1½ to 13; East Herodsfoot, 1½ to 1½; East Caradon, 1 to 1½; East Pool, 35 to 35½; Gawton United, 1½ to 1½; Gasgow Caradon, 1 to 1½; Herodsfoot, ½ to ¾; Hingston Down, 1½ to 1½; New West Caradon, 1 to 1½; Lady Berths, ½ to 1; Marke Valley, 1½ to 1½; New West Caradon, ½ to ½; South Condurrow, 9½ to 10; South Crebor, ½ to ½; South Condurrow, 9½ to 10; South Crebor, ½ to 1½; South Devon United, 3 to 3½; South Frances, 10½ to 10½; Timorth, 18½ to 19; West Basset, 15½ to 15; West Caradon, ½ to 1; West Crebor, ¾ to 1½; West Tolgus, 31 to 32; Wheal Agar, 10½ to 16½; Wheal Basset, 5 to 5½; Wheal Crebor, 4 to 4½; Wheal Greebor, 4

MANCHESTER.—Messrs. JOSEPH R. and W. P. BAINES, sharebrokers, MANCHESTER.—Messrs JOSEPH R. and W. P. BAINES, sharebrokers, Queen's Chambers, Market-street (April 7), write:—The shortness of the account and the approach of the holidays have contributed to the still prevailing absence of business, resulting in another small amount of business for the week. Although so little disposition to operate is apparent, a feature is to be noted in the fact that prices remain with slight fluctuations, generally very fairly maintained. Some few concerns have lately once more moved into favour again, and here some fair advances are marked, but these are exceptional, the tone taken all round being very listless and inactive.

marked, but these are exceptional, the tone taken all found being very ussess and inactive.

BANKS.—Though very few transactions are reported, the figures realised show prices fully sustained, whilst amongst the variations, with one slight exception, the movements are for the better.—Higher: National Provincial, ½; Lancashire and Yorkshire and Consolidated Bank, ½.

INSURANCE shares have been very little dealt in during the past week, and figures do not call for remark, except in the case of Thames and Mersey Marine, which have changed hands at prices within a fraction of best now quoted. There are numerous alterations, considering the quiet tone that still prevails, some of which are worthy of note, as is also the fact that the adverse changes are few and slight. Marine insurance shares as a rule are better.—Higher: Ocean Marine, ½; Thames and Mersey Marine, ½, 6; Marine insurance shares as a rule are better.—Higher: Ocean Marine, ½; Queen, ½; London and Staffordshire Fire, ½; and British Re-Insurance, 6.—Lower: Royal Liverpool, ½; Sea, and English and Scottish Boller, ½,6 each.

Foreign Marine, %; Queen, %; Loudon and Staffordshire Fire, %; and British Re-Insurance, \$\(\) = \text{Lower} : Royal Liverpool, \(\) \(\) \(\) ; Sea, and English and Scottish Boller, \(\) \(\) \(\) \(\) \(\) deach.

COAL, IROX, &C., AND MINING.—Some little stir has occurred during one or two days of the week in these concerns, still though the changes are rather numerous, and in a few cases important, the business done has not reached much above what has been going on for some weeks lately past. Ebbw Vales have furnished the majority of the dealings at figures ranging between 9\(\) at which they were done on Friday last, to 9\(\) , which they touched on Monday and Tuesday, and are now down again to-day as low as 9. Llynvi Tondu have found purchasers'at enhanced quotations. Bolckow, Vanghan, and Co. (fully paid), however, are marked as done at a reduction. The changes include some very fair advances, whilst the adverse movements are less in number, and are not generally so marked. The following are higher:—Sheepbridge Coal and Iron, 2\(\) is Bilbao Iron Ore, 1\(\) ; Llynvi Tondu, \(\) ; Nant-y-Glo and Blaina P ref., 1. United States Rolling Stock, \(\) ; d. Knowles and Son, \(\) ; Tharsis Sulphur and Copper, \(\) ; and Llynvi Tondu Pref., \(\) —Lower: Tredegar Iron, \(\) A, 1: Ebbw Vale Steel, \(\) c., \(\) ; Bolckow (fully paid), \(\) ; ditto 12\(\) paid, \(\) ; Chillington Iron, \(\) ; Cammell, \(\) ; and Canadian Copper, \(\) ; ditto 12\(\) paid, \(\) ; Chillington Iron, \(\) ; cammell, \(\) ; and Canadian Copper, \(\); may demand which has are seen proving of a spasmodic character.

TELESRAPHS.—The alterations are all for the better, though very few dealings are reported in this market. Western and Brazilian each show transactions at about best figures marked. Meant and a second content of the conte

tory, this market continues without any life, any demand which has are seen proving of a spasmodic character.

TRLESGRAPHS.—The alterations are all for the better, though very few dealings are reported in this market. Western and Brazilian each show transactions at about best figures marked. Anglo preference are ½, and ditto deferred and ordinary ½ each better; West India and Panama, ¾; United States Direct and Eastern ½, each light,——CANAIS.—A solitary transaction each in Bridgewater Navigation and Macclesfield comprise the business done, and prices are without alteration.

atteration.

Miscellaneous.—Very little going on, and changes confined to a rise of 1 in Union Plate Glass, and fall of ½ in Manchester Carriage and Trams A.

Raliways.—The turn in the market during the past week has been favourable. Scotch stocks, Great Easterns, Great Westerns, and Brighton, A., showing a decidedly improved tone. The last-named, however, has failed to sustain its highest price. Other stocks are firm, and had it not been for the unfavourable Board of Trade Returns, we should doubtless have had to report much advanced prices. In Canadian the changes in Grand Trunk descriptions are for the better, but only in the Ordinary and Third Preference is there any movement of moment. Great Westerns have responded well to the buying, were at one time up to 16½, but relapsed slightly on lack of support. American prices are decidedly enhanced for Pennsylvania and New York prem; and Ohio Mortgages, the Thirds coming in to-day for a sharp rise. Eries, and Philadelphia and Reading were firmer during the earlier part of the week, but the demand ceased, and New York prices coming easier values weakened.

Hull.—Mr. W. Fowler Sutton, stock and share broker, St. Mary's Chambers (April 7), writes:—The railway markets have shown more life this week, and prices generally are higher. Brighton, A, have exhibited their usual liveliness, and yesterday fell 2 per cent. in about two hours, rallying about 1½ per cent. again to-day, and at the close have lost about 1 per cent. of the improvement. A large issue of new stock is credited with being the cause of these movements. Caledonians have been good to-day also, but close flat. The present weather will probably benefit the heavy lines, but cannot help the passenger ones. Trunks and Canadas have been in favour, and the latter are generally expected to improved, while opinions respecting the former are very divided. American Rails firm, especially Attailse, the Thirds being very strang. Local stocks firm, with but little business.

Hull Docks, 85½; Hull Banks, 12½; Yerkshire Banks, 25½; London and Yorkshire Bank, 32s. 6d.; Earle's Shipbuilding, 20; Hull Tramways, $9\frac{1}{4}$.

SCOTCH MINING AND INDUSTRIAL COMPANIES SHARE MARKETS.

STIBLING .- Mr. J. GRANT MACLEAN, sharebroker and ironbroker

Glasgow Engineering shares are now quoted ex dividend of 5 per cent. Lawes to Ghemicals, 5½ to 5½; Scotish Wagon (new) shares are a fraction higher at 59s. to 69s.

MONKLAND SHON AND COAL COMPANY.—The committee of shareholders of this company appointed at last meeting have issued their report to established the meeting in about 10 days or so. They state they are satisfied last year was altogether exceptional, chiefly owing to the long-continued miners' strike. The result of the lock-up of the company's resources hereby caused is shown by the fact that had the floating stock at close of last year been of similar amount to that at end of 1878, the company would have been in been of similar amount to that at end of 1878, the company would have been of a better financial position by 36,2502, while its pressing obligations now do not exceed 25,0002. The debenture account is in an unsatisfactory position, as out of a total issue of 83,444, \$2,2002. stands at call. The company have further borrowed 90002, on security of a portion of their rolling stock, A valuation of the work has been made, and amounts to 317,964. as a going concern, and the stock and stores to 80,0002. The committee conclude that they are satisfied of the inherent vitality of the concern from the following facts taken from the books:—

(1) Its ability to manufacture pig-iron remuneratively when selling at low prices, as proved in 1879, when 71,534 tons were sold at 48s. 2d., and leit a profit of 2s. 10d. per ton; (2) Notwithstanding the low prices of coal, the profits during the last three years from that source have averaged 68832; (3) The profits on malleable iron during some time have averaged 14182; and (4) The income from rents, &c., has averaged 15886 in same time. These profits have been absorbed in management expenses, depreciation, and interest in debentures. The committee believe the company—the Monkiand Debenture Company Climited)—which will pay off the existing debentures and receive similar securities, the Iron and Coal Company being de

EDINBURGH.—Messrs. THOMAS MILLER and SONS, stock and share-brokers, Princes-street (April 7), write:—Since last report the railway market has been firm, and prices have generally risen. Caledonian has improved from 103 to 104\(\frac{3}{3}\), North British from 78\(\frac{3}{5}\) to 79\(\frac{1}{5}\), Glasgow and South-Western from 113\(\frac{3}{5}\) to 114. Highland shows no change at 104. Great North of Scotland at 62 is \(\frac{1}{5}\) lower. Brighton Deferred, North-Eastern, and some other English stocks are quoted higher. Great Western of Canada and Grand Trunk of Canada have risen on good traffic returns. Bank Stocks have been quiet. Bank of Scotland has risen, from 290 to 292. Commercial has receded, from 249\(\frac{1}{5}\) to 249. Insurance shares have also been quiet. Foreign and colonial property companies show little change. There has been some movement in the shares of one or two mining companies. Marbella iron ore have risen from 85s. to 92s., Cairntable from 112s. to 115s., Glasgow Caradon from 19s. to 22s. dd., Huntington Copper from 54s. 6d. to 57s., Tharsis from 38\(\frac{1}{5}\) to 249. Canadian Copper had a sudden fall yesterday; the decline during the week is from 43s. to 33s. Clyde Coal have further recede, from 80s. to 76s. Dalmeny oil shares have risen, from 14\(\frac{1}{2}\) to 15, and Uphall oil from 6\(\frac{1}{16}\) to 6\(\frac{1}{2}\). EDINBURGH. - Messrs. THOMAS MILLER and SONS, stock and share

IRISH MINING AND MISCELLANEOUS COMPANIES' SHARE MARKET.

MARKET.

DUBLIN, APRIL 7.—There has been quite a revival in the Mining Share Market during the past week. Berehavens have been very active but fluctuating. On Monday they were very freely dealt in at 7s. On Tuesday the opening price, 8s., showing an advance of 1s. on last evening's, and, after having relapsed to 6s. 9d., a rally to 7s. 3d. took place. Killaloe Slates were fairly firm, and ross 3d., to 10s. 3d. Yesterday Berchavens were dealt in as high as 7s. 3d., but at the close not more than 7s. could be obtained. Killaloe Slates were steady, and well maintained their guotation.

CORK .- Messrs. J. H. CARROLL and Sons, stock and share brokers CORK.—Messrs. J. H. CARROLL and SONS, SLOCK and SHAFE DIOKETS, South Mall April 6), write:—Markets have been very idle for the past week. Great Southerns were done at 112\frac{3}{2}\$ to 113\frac{1}{2}\$, and Midlands at 83 to 83\frac{1}{2}\$. Bandons changed hands at 80\frac{1}{2}\$, closing sellers. Passages are, however, in demand, at 11\frac{1}{2}\$, National Banks remain 67\frac{1}{2}\$, and Munsters, 6\frac{3}{2}\$ to 6\frac{1}{2}\$; but Provincials are better, at 61\frac{1}{2}\$ buyers. Hibernians steady, at 43\frac{1}{2}\$. Cork Steam Packets are much stronger, at 12\frac{1}{2}\$ to 12\frac{1}{2}\$, and Lyons shares were asked for at 5\frac{1}{2}\$. Goulding's are offered at 9\frac{1}{2}\$, and Daly's at 3\frac{1}{2}\$. Levys were done at 4 to 4\frac{1}{2}\$, and Harbour Board Debentures at 102\frac{1}{2}\$.

From John B. Reynolds: There is no particular feature of interest in the markets for public securities. Important meetings of shareholders have been held, and on the whole the results have been creditable. There has been a strong under-current of buying in the mining market, but those who have been securing shares have been quiet and dexterous. Unquestionably the most important mine meeting of last week was West Kitty. The result proves how easy it is to conduct mining business on sound principles, and how the public appreciate such action. The shares are in very strong demand, and those who during the past 18 months have given adverse opinions concerning their merits will not come off with credit. It is fair, however, to presume that they are but imperfectly informed. New Kitty, as a matter of course, will follow suit. Why those shares should be quoted at 30s. I, for one, am utterly at a loss to understand; but as buyers come in they will find that instead of New Kittys being at 30s. the real price more likely will be 50s. The western ground of West Kitty adjoins New Kitty, and the 72 end west is making straight for New Kitty boundary. If the western ground in West Kitty thrus outlas there is every reason to suppose it will, then, as Wheal Kitty is to West Kitty so West Kitty will be to New Kitty; but New Kitty has other advantages apart altogether from her prosperous neighbour, and those advantages the public would do well to look into immediately.

It a fatal policy on the part of investors to wait until there is an excitement in properties like these. Their success may be taken as a foregone conclusion. Two years ago West Kitty shers were strongly recommended at 20s. each, but scarcely anyone would buy them, notwithstanding the real fact was that they were just as valuable then as they are now, for the ore ground was known to exist, and the mine had been proved beyond all doubt by Wheal Kitty. Pretty much the same may be said of New Kitty at the present moment. West Polbreen, also adjoining New Kitty, is un From JOHN B. REYNOLDS: There is no particular feature of inte-

ever just as valuable then as they are now, for the ore ground was known exist, and the mine had been proved beyond all doubt by Wheal Kitty. Pret much the same may be said of New Kitty at the present moment. West Pebreen, also adjoining New Kitty, is undoubtedly a property of great merit, not he less because it can be worked so cheaply. The public should bear in mit that Trevauaance above the adit level made an enormous profit, probably ov 220,0002. What is to hinder West Polivreen making large profits also also the adit level? Oareful attention to the last report will show that they a starting in various directions for the outling of iodes, anyone of which may ha a surprising effect on the future of the minc. The pronounced language

favour of the district is not the language of exaggeration—on the contrary, it is the only language justified by facts. West Basset meeting is looked forward to with great interest, and an increased dividend is expected. South Frances shares have been unjustifiably low. The report that more calls will be required, &c., is merely for the purpose of depreciating shares which must have a great rise in value. If the price of tin keeps up (and there is every probability it will go much higher) Dolcoath shares are about the best dividend stock on the market. Altogether the mining prospects are very cheering; and, bearing in mind the present price of tin as compared with the comparative depression in trade, we may venture to hope that the price of tin will rise to a higher level than even the most sanguine predict.

Meetings of Bublic Companies.

ECONOMIC LIFE ASSURANCE SOCIETY.

The ordinary annual meeting of the members was held at the offices, Bridge-street, Blackfriars, on Saturday,
Mr. HENRY BARNETT in the chair.

The SECRETARY read the notice calling the meeting.

The SECRETARY read the notice calling the meeting.

The following statement for the year 1880 was appended to the accounts:—Number of proposals received, 449; for which policies were issued, 378; declined, 39; not completed, 32; number of policies in force at the end of the year, 10,162; amounts assured thereon, 8,327,5761.; absolute bonus remaining, 1,168,1241., making total liabilities of 9,496,7001.; sums assured by new policies, 301,6451.; amount of new premiums, including new licenses and commutations, 11,2121. 11s. 3d.; total premium revenue, 227,9721. 7s. 4d.; total revenue from premiums and interest, 377,0651.13s. 4d.; miscellaneous receipts, 29521.7s. 1d.; assurance fund, 3,470,7031.12s. 2d.; average rate of interest per cent, on investments, 44.8s. 2d.; statement of rate of interest per cent. on investments, 44. 8s. 2d.; statement of claims accrued, on 206 policies assuring 168 lives in the sum of 254,408... including bonus; out of the 206 policies determined by death, 197 assuring 183,556... carried 60,102... bonus, averaging 323 per cent. on the sum originally assured, irrespective of the bonus received in cash, a reduction of the premium during the lifetime of the assured.

the assured.

The CHAIRMAN, in moving that the report and accounts be received and adopted and entered on the minutes, said it would not be necessary to detain the members at any length in commenting upon the figures which they had heard read. He thought he might begin by saying that he had nothing sensational particularly to communicate to the policy holders, but at the same time the directors felt they might congratulate them upon the steady progress of the business. (Cheers.) Considering that the times in which they lived were not very favourable for mercantile pursuits, or still less for agriculture, they could not be surprised that the business of life assurance had been, he fancied, rather slack during the past year. However, the board were able to point out that the Economic had been going on quietly and steadily. The figures all pointed in the right direction. The fact was that those figures which they desired to see decrease had diminished. He would just draw a comparison between the figures of this year and last in order to show that what been going on quietly and steadily. The figures all pointed in the right direction. The fact was that those figures which the directors desired to see increase had increased, and those which they desired to see decrease had diminished. He would just draw a comparison between the figures of this year and last in order to show that what he had stated was correct. They had received 449 proposals for new policies against 431 in the previous year, for which 379 policies were issued as against 353 in the year preceding, being an increase of 25. The sums assured by the new policies were 25,000. In one than last year, being 30,1654, against 273,548. The average amount of the policies had been rather higher; in lace 1848 and 1849 in the policies had been all increased, between 40004, and 50004, and those under 5004. Had rather a situation of the policies had been rather higher; in lace 1849 in the seed of the major of the policies had been all increased of the house of the seed of the major had been all increased of the house of the house of the house of the head of

was pleased that the board had established a superintendent in Manchester. He knew a gentleman there who had obtained a very large amount of business for another assurance office.

The CHAIRMAN said the question of commission was mooted some years ago, and there was some talk amongst the life assurance offices of reducing or abolishing the commission, but it was responded to in such a small way that the actual effect was to increase the commission, and extra commission was pald by some offices. The real question was whether the result was equivalent to the amount paid. The actuary had gone very carefully into it, and had advised the board that the increased commission could properly be given. Therefore, the directors wished it to be known to solicitors and others that the directors did not wish to be niggardly with respect to commission; at the same time they considered themselves well within the mark.

A MEMBER said that 26,700%, was put down as the value of the office premises which was the same amount a last year. He thought it was usual to write of some amount for depreciation.

The CHAIRMAN said they put by a certain sum every year for a sinking fund, and wrote the premises down every five years. That was done on the last ocasion, and the board proposed to do so every quinquennium, and a certain sum would be kept in reserve for that purpose. He believed that practically there had been very little diminution in the value of the premises. On the contrary he thought they were now more valuable than they were. (Hear, hear.)

The MEMBER said the answer was astisfactory, but he thought the fact ought to appear on the face of the accounts. Keen men of business would notice it, and consider it a flaw unless the premises were written down every year.

The CHAIRMAN: We will take that into consideration.

Mr. F. L. Robinsons was a the chairman had answered a good deal that he was going to call attention to. He had no doubt the actuary had fully gone into the mutual officers on the subject of commission. He fancied th

hoped the directors would not consider teleniser's first-carry phases creased commission.

Sir Morroux Wells said it was really a question whether the increased business paid for the increased commission. He supposed the directors found it necessary in the increased competition which existed to make that allowance of commission, and he would say to the hon, gentleman who addressed them just now that, supposing the board had not adopted the principle of commission, what would have been the state of business without it? The falling off in business, if any had taken place, would have been attributable to the non-payment of examination. (Hear, hear.) In an : sayrance affine it was necessary

that the business should be kept up in comparison with past years, and that there should not be a falling off, because it would have a very prejudicial effect in the commercial market if an office were to show a falling off, and be prejudicial to the interests of the society. If the increased commission led to good substantial business it would pay. (Hear, hear.) He thought the accounts presented were on the whole most satisfactory. (Cheers.)

Mr. MITCHELL asked whether, under the head of mortgages in the United Kingdom, it would not be desirable to give more particulars, and state whether they were freehold or leasehold.—The CHAIRMAN 3: They are all freehold.

Mr. MITCHELL thought that important fact should be stated in the accounts. The CHAIRMAN said he might mention that out of about 10 per cent. for expenses, about 3 per cent. was paid for commission.

A MEMBER asked whether the 242,595£ for investments in British, Indian, and tolonial Government Securities represented the amount which they cost, or the actual value?—The CHAIRMAN it brepresents the cost; on some there is a considerable profit at the present price.

The resolution for the CHAIRMAN, seconded by Mr. MITCHELL, the sum of 1502.

The resolution for the adoption of the report and accounts was then put and carried.

On the motion of the CHAIRMAN, seconded by Mr. MITCHELL, the sum of 1601. was voted to the auditors for their services during the past year.

The CHAIRMAN moved that Messrs. A. Buckley, Hugh M. Gordon, O. E. Grant, and J. L. Daniell be re-appointed auditors.—Mr. HARMAN seconded the resolution, which was put and carried.

On the motion of Sir Mordaunt Wells, a cordial vote of thanks was passed to the Chairman and directors.

The CHAIRMAN: Gentlemen, it is gratifying to receive this mark of your confidence—your directors have but one desire. We are all deeply interested in this society, and have been long connected with it, and we have but one wish, which is to increase and improve the business for the benefit of the policy holders, and as far as possible, I wish to say that we wish to take them into our confidence. On every occasion, ever since I have been a director of the office (which is now a great number of years) we have always expressed our wish candidly to inform the policy holders of what has been done, and we are only too thankful to them for the kind criticism which from time to time they have made, and which I trust has dene us very much good. The suggestions which have been made we will bear in mind. (Chers.)—The proceedings then truminated.

NORTH ALFRED CONSOLS COPPER MINING COMPANY.

NORTH ALFRED CONSOLS COPPER MINING COMPANY.

The first statutory meeting of shareholders was held on March 26 at the Cannon-street Hotel,—Major Hon. O. G. LAMBART in the chair. The CHAIBMAN stated, in the course of his remarks that the operations on the mine having only commenced in December last, and the works being necessarily of an exploratory character, very large results could not be at present expected, and in consequence of the severity of the weather, which rendered the ground impracticable for two or three weeks, followed by heavy rains, which necessitated a good deal of labour and time in unwatering the mine, a larger quantity of ore than that at present raised could not be effected, but that arrangements were being made to fix an engine to unwater the mine, so that the adit level would be kept permanently dry, enabling the further raising of ore for the market in addition to that already raised.

The following general report was then read from Capt. Tregoning, engineer and manager of the mine:—

The following general report was then read from Capt. Tregoning, engineer and manager of the mine:—

Since Nov. 23, 1830, the date of the registration of this company, attention has been directed to the draining and development of the caunter lode, which to effect a drain from 2 ft. to 10 ft. deep and 35½ fms. long, including the driving of a cross-cut 12½ fms. in dead ground, have been brought in, and pipes laid where necessary to drain the mine. The adit level on the caunter lode, which could not be proceeded with, as explained in the prospectus, until the above had been completed, has been driven 4 fms. 5 ft. 3 in., and although very shallow, indeed, to expect mineral, thas produced several hundred weights of very superior copper ore. In the winze 5 ft. below the adit level and 7 fms. from the present end (from whence the box of ore was taken), producing 7-70 per cent. of copper, as per assay of Messrs. Johnson and Sons, in January last), the lode is upwards of 1 ft. wide, and worth from 4½ to 6½, per fathom. To see this lode at a greater depth is very desirable, but to do so without the aid of draining power is insuperable.

For the effectual prosecution of the mine, and in order to develope the several lodes, the present adit level should be driven vigorously by six men. Being adjacent to the Great Wheal Alfred Gonsols, which mines were wrought a productively over many years, give strong reasons for believing that North Alfred Gonsols, which mines were wrought a productive results.

productive results. expressed confidence in the future success of the undertaking, the report was approved and adopted, and the proceedings terminated with a vote of thanks to the Chairman.

EAST BLUE HILLS MINE.

At a meeting of shareholders, held on March 28 (Mr. J. Y. WATSON, F.G.S., in the chair), the accounts showed a debit balance of 150l. A call of 5s. per share (3000l.) was made, and a resolution passed that all the shares in the first instance should be offered to the

passed that all the shares in the first instance should be offered to the shareholders in Blue Hills at cost price.

Mr. W. H. H. Watson was appointed secretary in London.

Mr. Pike (the purser) said much attention has lately been directed to the St. Agnes mining district, partly in consequence of the discoveries made, but more so because of the increased attention in Cornish mining as a legitimate field for capitalists. From authentic

to the St. Agnes mining district, partly in consequence of the discoveries made, but more so because of the increased attention in the Cornish mining as a legitimate field for capitalists. From authentic records in the early part of the century immense profits were realised in the Polberro, Penhalls, Blue Hills, and East Blue Hills Mines, and recently in the reworking of Wheal Kitty, West Kitty, Penhalls, Blue Hills, and others. The two master lodes in the latter mines—the Pink and Betsy lodes—have been worked successfully to a depth of 80 fms., but in East Blue Hills they remain unwrought below the adit level. Previous to the year 1818 very large returns of tin were made from this mine above the adit, and operations were only suspended when it was impossible from want of pumping machinery to follow the lodes in depth. As the water charges are light a comparatively small outlay will be sufficient to creet a suitable engine and follow the lodes below the adit, when, judging from their yield above that point and the success of the deeper workings in Penhalls and Blue Hills, profitable results will follow. He believed that a judicious expenditure of the result of the call made (3000L) will prove East Blue Hills to be a valuable property.

The following agent's report was then read:—

Mirch 21.—This mine sett is situated east of the Blue Hills sett, adjoining thereto, and it embraces the principal lodes of that mine, two of which have yielded large quantities of some of the best tin found in the county, and from which the various adventurers have realised large amounts in profits both in the Blue Hills and the Penhalls Mines, where the Pink lode has been worked to a depth of 80 fms. below the adit, at which point in the Blue Hills this the found in the county, and from which the various adventurers have realised large amounts in profits both in the Blue Hills and the Penhalls Mines, where the Pink lode has been worked to a depth of 80 fms. below the adit, at which point in the Blue Hills, these lodes are apparently

NORTH BUSY MINING COMPANY

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A special general meeting of shareholders was held at the mine on Tuesday,—The Rev. O. SUMNER, of Bristol, in the chair.
The usual preliminaries having been disposed of, a very animated discussion took place.

discussion took place.

The CHAIRMAN said he would be very sorry for the meeting to take the form of an indignation meeting, as he had a decided objection to such meetings. North Busy was not a bad property. It had proved itself to be exceedingly good. He had been told by a gentleman present, with whom he went into calculations, that since last year the sum of 5554th had been spent in that mine, and he asked where had the money gone? It came out of North Busy, and he thought such a thing was unqualled. He did not think they would have found a mine in Cornwall that would have done such a thing. But instead of doing what they had done they should have made calls, only that people had such a horro of calls. The mine never ought to have got into its present state, and it never would have had he been on the committee, because he would have had honest and legitimate mining, and he would have known what was going on. He thought if the faller had been properly managed it would never have got into its present state,

Mr. W. T. Davey read the report of himself and Mr. W. Nicholls. Mr. Woodward himself has corrected a cierical error of 6l. which occurred in bringing forward the balance from the accounts held on Nov. 24 (4ll. 1s. 9d.) should have been 47l. 1s. 9d., said to be a balance of profit. We find, however, that a large amount of merchants' bills incurred in the 16 weeks ended Sept. 30 were omitted to be charged. Your statement of accounts should then have shown a loss on the four months' working of about 955l. 8s. 2d., and a balance against the mine of 899l. 4s. 3d., instead of a profit, as shown in the statement of 47l. 1s. 9d. We find merchants' bills omitted to about the sum of 389l. 18s. 2d.; tinstone and block tin over-credited and not sold, 432l. 7s.; mundic, 35l., making together 467l. 7s., less short 17s. 2d. credited on blende—making together a total over-credited of 466l. 9s. 10d. The auditors found the total liabilities 291l. 1s. 2d., and the assets are the balance against the shareholders, 1806l. 17s. 11d.; mundic, 35l., minerals sold and unpaid for, 423l. 8s. 4d.; tin leavings (per B. Trevethan) account), 20l.; labour cost to Feb. 15 (paid March 12), 305l. 14s. 11d.—making together 2591l. 1s. 2d. They estimated the machinery, pitwork, stamps, and other plant in its present position to be worth 1900l.; tin leavings at stamps, 270l.; tinstone at mine computed at 52l.; copper ores computed at 52l.—total 223l. Balance against the shareholders as shown in the above audit sheet; 1806l: 17s. 11d. The assets over liabilities are 425l. 2s. 1d.

Capt. Prisk, with regard to the tin being credited dressed] that, they thought they were justified in crediting it in the accounts. That was the reasonit was charged. The goods they had purchased, because they thought if they delayed buying a higher price would; have to be paid for them, but the bills were not entered, as they did not intend to charge them until they used the materials. His character was now at stake. He never dream of the whole of the blame being attached t

ally done.

This was seconded by Mr. J. D. Collins, and supported by Messrs. Letcher and Lanyon, but on Mr. Carter withdrawing his proposition, the amendment was also withdrawin.

Mr. Dobell was glad Mr. Carter had withdrawn his motion. He had had an opportunity that day of looking through the books, and he must say that there was nothing in them but what would satisfy any reasonable man, and nething that could not be amply and properly explained.

The CHAIRMAN read the resignation of Capt. Prisk, and the removal of Capt. James was deferred until the next meeting, after which the proceedings terminated.

James was deferred until the next meeting, after which the proceedings terminated.

LINARES LEAD MINING COMPANY.

The general meeting off-hareholders was held at the offices of the company, Queen-street-place on Thursday,

Mr. WM. Cox (the Chairman) presiding.

The notice calling the meeting was read by Mr. HENRY SWAF-FIELD, the Secretary; the report and accounts were taken as read.

The CHARMAN, in moving the adoption of the report and accounts, said he had very few observations to make beyond what appeared in the report which had been circulated. At the same time, he must make one or two remarks, because he felt in the same uncomfortable position which the chairman of every lead mining company which had called a meeting within the past six months must have felt in, that was to say they had nothing but bad news to impart it regard to the price of lead; and the price was worse now than during the six months over which hoped and he believed that the defression would soon pass away, and the company was in a fairly prosperous condition, because they had been able to make a profit of 200%, out of which the directors had paid advidend of 4s. per share, even with lead at the present low price, so that if they had had a better price for lead they would see what a fine profit the mine would have made. The directors had no despair whatever about the mine. As a mine it produced well, and the order of the state of the price of the state of the price of the shareholders, chair of the fact that 12, or 2, more in the price of lead per ton made a considerable difference in the dividend payable to the shareholders. (Hear, hear.) The directors did all they could; they were all largely interested as shareholders, and when they were deadworing to make a director.

Mr. RICHABD TAYLOR said the mining works were so clearly and far the price

Ancho. The great decrease in the price of lead and the diminution in the profit lead the directors to determine to suspend that, but they did not consider it permanently abandoned.

The CHAIRMAN: No; certainly not.

Mr. RICHARD TATIOR said the returns from the old Pozo Ancho Mine had very much decreased in late years, and the company had been almost living upon two rich discoveries made upon two rich lodes in the workings from Pell's shaft and Warne's shaft, where they had had remarkable success, and the company had reaped the profits. The levels during the last six months had been generally productive, and many had opened up good stoping ground, which might be profitably worked. There was one level which had improved greatly during the last month, and was turning out 5 tons of lead per fathom. That was the 115, where there was a rich course of ore, and there was the 180 to follow, for which they were deep enough, and he trusted that in the bresent year they might open up a rich mine in the levels below the 115. He thought they might say the prospects of the company's mines were still very fair, and with anything like a good profice for lead the company would be making good profits. (Hear, hear.) They had made some profits and some dividends up to the present time. But they had still another string to their bow, inasmuch as one of the effects of the low price of lead might be to bring within their reach other mines which might be obliged to succumb to the low price. Without pointing to any one mine in particular hecould only say that the attention of the director's would be very closely directed to that subject, and it was probable that during the present year the directors might be able to add to the présent property some other mines, which would go in aid of the lod one. (Cheers).

On the motion of Mr. Doxagax, seconded by Mr. S. J. Wilder, a vote of thanks was passed to the Chairman and directors, and the meeting broke up.

ALAMILLOS MINING COMPANY

A general meeting of shareholders was held at the offices of the

ompany, Queen's-street-place, on Thursday.

Mr. J. PHILLIPPS JUDD in the chair.

Mr. HENRY SWAFFIELD (the secretary) read the notice calling the meeting; the report and accounts were taken as read.

The CHAIRMAN said he thought the shareholders would agree in thinking the balance-sheet and report as satisfactory, as the continued depressed state of the lead market would admit of. (Hear, hear). It was a subject of great congratulation to the discretized thinking the balance-sheet and report as satisfactory, as the continued depressed state of the lead market would admit of. (Hear, hear.) It was a subject of great congratulation to the directors to be able to declare a dividend at all. He could assure them that during the last six months they had passed through a very auxious period, and the last six months they had passed through a very auxious period, and the last six months they had passed through a very auxious period, and the last six months they had passed through a very auxious period, and the last six months they had passed through a very auxious period, and the last six months they had passed through a very auxious period, and the last six months they had passed through a very auxious period, and the price of lead had only averaged about 15.6 per ton, at which they for congratulation. This was to be attributed to a great extent to the economies which the directors had been able to practice, and which they would continue to carry out. He hoped they had seen the worst of these depressed prices. The lead market was not so good as when he last had the pleasure of meeting them, but the mine was in rather a more prosperous state than then. In proof of this had they would read an extract from a letter from Mr. Tonkin, dated March 30, which stated:—"I went through the measurements with the captains on Monday last, and found that great lengths of rich lode had been driven through in the month had found that great lengths of rich lode had been driven through in the most of something like 1000. Therefore, on the whole, he hoped the directors would be astisfied with the position they were in now, and would lond years she hope that the lead market might improve, and the dividends might increase. There had been a little falling off in the production, which was owing to a very wet season, but as a set off against that there was a reduction in cost of something like 1000. Therefore, on the whole, he hoped the directors would be astisfied with the position they were in

been occasioned there, but he fancied that in Seville (with which town he was acquainted) considerable inconvenience must have been experienced, inasmuch as the quay must be under water, and the lead could not be removed, but the simple inconvenience would be the retardation of the loading, and the dirty state of the lead.

the quay must be under water, and the lead could not be removed, but the simple inconvenience would be the retardation of the loading, and the dirty state of the lead.

Mr. WIDE asked whether the reduction of freight was the result of competition?

Mr. RICHARD TAYLOB said it was the result of competition?

Mr. RICHARD TAYLOB said it was the result of competition?

Mr. RICHARD TAYLOB said it was the result of competition between the ports of Seville and Malaga, which no doubt would continue, and no doubt the freight would continue at the present price. He went on to say that it would not be necessary to detain the meeting long with any observations with regard to the mine, for Captain Tonkin had, as he always did, very clearly and fully explained all the mining operations. He wished to point out to them what, in his point of the mining operations. He wished to point out to them what, in his point of the productive points which had been opened up by former workers in this piece of mining ground, and the success which had stiended their oferations it several of them. There were many points which were productive, as the shareholders would see by an examination of the plan suspended on the wall. In the central points there had been a considerable amount of working, from which the company had derived large returns. But there were many points this company had not touched which had been productive before but abandoned, as the mines of the Linares Company were before the old Pozo Ancho Company brought capital, and enterprise and mining skill and mechanical appliances which were unknown before. There were a number of these small mines worked by the mining ipopulation of that country, who raised the ore a long as they could master the water, but when the water got in they were driven from the works and abandoned them. That was the case in almost all those in which the company had worked, and it was also the case with numbers of others which what had been for the last two or three years worked by miners on tribute—that was

THE FORTUNA MINING COMPANY.

The half-yearly general meeting of shareholders was held at the offices of the dompany, Queen-street Place, on Thursday,

Mr. Robert Henry in the chair.

Mr. Henry Swaffield (the secretary) read the notice calling the the meeting, and the report and accounts were taken as read.

The Chairman said it was much to be luminted that, out of the large number of shareholders there were, besides the directors, only six of state which in the second that when things were Mr. Henry Swaffield (the secretary) read the notice calling the the meeting, and the report and accounts were taken as read:

The Chairman said it was much to be luminized that, out of the large number of shareheiders there were, besides the directors, only six of everel were present. He had observed that when things were going on badly the shareholders came in great numbers to find fault with the directors. In the present case the directors could not make a very good show, nor make a dividend, which would satisfy the shareholders more than it did the directors. This arose from no fault of the unine, nor any thing belonging to it, qual tarse simply from the low price of produce, which shareholders more than it did the directors. This arose from no fault of the unite, nor any thing belonging to it, qual tarse simply from the low price of produce, which shareholders are stated to the state of the state of the price of the unite of the united of the state of the state

ried unanimously.

A vote of thanks to the Chairman and directors closed the proceedings. [For remainder of Meetings, see to-day's Journal.]

AUSTRALIAN MINES.

weil, but the western side is not so good. In the 150 ft. level we have a large body of stone on the south side of the cross-cut, within 10 ft. of the New Era Company's boundary, within little gold, but poor. I am putting up a rise from the bock of this cross-cut to prove the ground at this point, where the quartz made a splice going north, thinking there is quartz over the back of this splice. This is the cross-cut going west from the eastern lode, not from the prospecting shaft. The stopes from the back of the level above mentioned are looking just the same for quartz. On the top stope the quartz has made a division, one part of the stone going east and and the other going west. The western run of stone is from 1 to 3 ft. thick, and the eastern run of stone are leaders going east one over the other, from 2 in. to 3 ft. in thickness. Those leaders are flat, but the western run has an underlie about 2 in 6. We have crushed 396 tons during the fortnight. Result, 63 ozs. 13 dwts. retorted gold—not so good as last, but I hope ft will be better next time. I shall elean up once a month for the future. I have not done any work in the 70 this month, as i removed the men from hereto put up a rise from the stopes, 100 ft, level end, to fill up the ground. Have not been at the bottom of the western shaft yet; at still bad. The gold returns for the month ending Feb. 14 were 583′. Its. 1d.; pyrites, 48′.; together 693′. Its. 1d. Total tolonial expenditure for the same period, 496′. 6s. 7d.; profit, 112′. 4s. 6d. The balance of cash in the colony is 330′. 7s. 10d., and liabilities about 45′. The cost has been increased by pumping out the water in the western shaft on the western reef, which has been done preparatory to resuming work on this reef, in accordance with Capt. Munday's recommendation and the favourable opinion he has formed of it.

SILVER HILL MINING COMPANY.

SILVER HILL MINING COMPANY.

In last week's Mining Journal the visit of a deputation of the Silver Hill directors to the mine was announced and the probability of their report being published this week. It is now subjoined, and will be read with general interest. The names of the directors and of the well known engineer by whom they were accompanied are sufficient guarantees of the genuiness of the undertaking, and we are glad to see such a step in the right direction—i.e., the directory of a mine ascertaining by personal investigation on the spot the reality of the business they undertake. The following is the report on the Silver Hill Silver, Tin, and Copper Ore Mines, near Callington, Cornwall, made April 4, 1881, by George Henwood, mining engineer:—

Accompanied by a deputation of the directors, I made a thorough and critical examination of the control of the directors, I made a thorough and critical examination of the state of the control of the phenomena of mineral veins occurring therein. The object was to ascertain on the spot if the lodes, as laid down in the plan issued with the prospectus, had been correctly defined, and the statements relating thereto could be verified. To do this required considerable time and effort, seeing the set Is so extensive and in comparatively vigin ground, surrounded by exceedingly valuable mines, rich for the ores and minerals above stated.

Barrow and Lungford toles, which may be considered as one, since from their opposite dips they form a junction at a shallow depth. These are silver and copper lodes; the Langford lode has been cut by the tunnel, now in the course of prosecution, to cut and drain the entire series, and has been driven for about 490 Hz.; the lode here is from 3 to 5 ft wide, and has been driven on some 30 fms. for proof of its continuity; it consists of a fine back of gossan, quartz, exbonate of iron, and a bine flookan, ceacity similar to the Langford lone in Wisel Langford, and by comparing a portion of it with the lodestiff at the Langford Mineral a

PHENIX AND WEST PHENIX UNITED MINES, IN THE PARISH OF LINKINHORNE, CORNWALL. SPECIAL REPORT.

PHENIX AND WEST PHENIX UNITED MINES, IN THE PARISH OF LINKINHORNE, CORNWALL.

SPECIAL REPORT.

Murch 31.—Having held my appointment as the consulting-agent of these mines above three months (during which time I have on several occasions throughly examined the underground workings, as well as all the operations at the surface), I now venture to present to you this my first report on the mines in general, and their future prospects. The SHAFT.

The 130 is being driven west by the side of the lode, by six meit, at 84, per lathom, I this mode of working we find in many instances to be the most economical, as the lode about this point is spare for driving in. For the last three months this end has been unproductive, owing to the level being driven through the cross-course for several fathoms, and the lode has been disordered by its influence on both sides; but I am pleased to say that we have now a well defined lode producing good work for tin, and a great improvement here may daily be expected. The 110 is being driven west of the great cross-course, by six men, at 94. per fathom; the other carried 6 ft. wide, which is worth 102, per fathom, and a pare of men are stoping down the side of the level which is worth 202, per fathom. The 100 is being driven west of the great cross-course, by als men, at 122, per fathom; the other course of the great cross-course, by als men, at 124, per fathom. The 100 is being driven west of the great cross-course, by six men, at 124, per fathom. The 100 is being driven west of the great cross-course with the production of this burden and the six of the love of the six of the cross-course, and nearly the whole drivage has been through valuable tin ground; it is also constitution of this burden and the six of the love of the six of the great worth and characteristics of the lode I consider the unwrought tin ground existing between this and your western workings is worth on the average 146, per fathom. This portion of your property, which is all in new ground to the surface, is now openin

and profitable mine in itself.

GENERAL REMARKS.

For several months your returns did not keep up, owing to the following causes:—

1st.—Nearly the whole of the principal tin producing ends in the old mine were worked up to the great cross-course just at the same time; consequently the lode was disordered, and a considerable distance through poor ground had the lode was found on the opposite side.

the long was disordered, and a considerable distance through poor ground had to be driven in each level before the lode was found on the opposite side.

2nd.—A seriour crush took place in the 100, which not only impeded progress in driving and stoping, but to some extent increased the monthly cost for timber and labour. These difficulties are now well got over, and you have the lode to the west of the main cross-course in four of your principal drivage—the 120, 100, 80, and 60. In the 100, which is the most advanced, the lode is worth for

of the week were 213 tons.

WEST FRONTINO AND BOLIVIA GOLD.—End of Jan., 1881: The Galiano Lode—Providencia jevel 1 owing to the want of a good timberman, we have been obliged to suspend the re-timbering of this level, but shall resume doing so immediately we can obtain a suitable person. Consuce level has been driven during the month 1 fm. 4 ft.; the ground is rather harder, but the lode is 2 ft. wide, composed of pyrites, quartz, and red mineral, and is improving in quality as we go up. Colombia Lode—Colombia Level: The ground is still hard, and little progress has been made in driving; the lode continues to produce good quality mineral. We have now commenced re-timbering the mouth of this level; and shall take advantage of the dry season to push on as fast as possible.—Granadino Level: Having completed the re-timbering, and opened up a communication with the Colombia level, have placed this, our only timberman, to ropen up and secure the entrance of the Colombia level.—Antioquia Level; The lode is 2 ft. wide, and producing a large supply of good quality mineral, and continued the colombia level.—Antioquia Level; The lode is 2 ft. wide, and company of the colombia level.—Antioquia Level; The lode is 2 ft. wide, and company of the colombia level.—Antioquia Level; The lode is 2 ft. wide, and company of the colombia level of the colombia level, and the colombia level of the lode is 2 ft. wide, and company of the colombia level of

PPLEMENT TO THE MINING JOURNAL.

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driving west of Palgrave's shaft, we have resumed driving; lode small, and not to value. In Poveda's winze, slinking below the 130, the lode is unproductive. Arrogo's winze, sinking below the 110, is going down in rich ground, valued at 1½ ton per fathom. Pepe, a new winze, slinking below the 85, is situated east of Swaffield's shaft, and in advance of the 80, west of Palgrave's shaft; it at present produces 1½ ton per fathom.

San Anton and San Francisco: The lode in the 30, driving east of Henty's engine-shaft, is unproductive at present. In the 45, driving east of Henty's engine-shaft, is unproductive at present. In the 45, driving east of Henty's ton per fathom. In the 45, driving east and west of Rica's winze, the lode in the laster end is poor, but in the former is good, and produces 1 ton per fathom. The 45, driving east of Henty's engine-shaft, is disordered for the present by a cross-course. In the 30, driving in the same direction, the lode—valued at ½ ton per fathom—is strong, and of a promising appearance; letting out water. The lode in the 25, driving east of San Francisco engine-shaft, is poor, and of no value. In the 40, driving east of San Francisco engine-shaft, we have commenced to drive in order to drain the shaft, so' as to be able to commence walling the same; the lode produces ½ ton per fathom. In the 40, driving west of San Francisco engine-shaft, there is a powerful lode, worth ½ ton per fm., containing barytes and galen. The lode at Henty's engine-shaft, sinking below the 45, is very strong, being valued at 1 ton per fathom, but the ground is harder for sinking.

ALMULLOS.—March 30: In the 130, driving east of Taylor's engine-shaft, the

toget Br. time 20, carturing cases on Sam Fannesson Congenies and Policy and Calle. In order to drait the shaft, or as to be able to commence walling the came; the lode produces 15 ton per fathom. In the 40, driving west of Sam Fannesson engles-shaft, there is a powerful took, worth 15 them took we the 45, is been strong, being valued at 1 ton per fathom, but the ground is harder for individual and the state of the control of the control

A new gold field has been discovered at Wilcannia, a rising town-ship on the Darling River, 583 miles N.W. by W. from Sydney. The field promises to be very rich, and is, therefore, attracting a large concourse of diggers from various parts of the country.

"ILL-GOTTON WEALTH DOES NO MAN ANY GOOD."—Mr. H. Waddington, who has been largely connected with Cornish mining for a great many years past, at the Redruth Mining Exchange meeting last week, deprecated in the strongest way many of the schemes lately being foisted on the public both in Cornwall and elsewhere—worthless schemes, as he termed them, with heavy premiums of 20,000., 40,000., and even 40,000. out of the shareholders' money put into the packets of the promoters; and, in his terso plraseology, said he was one of those who believed that "What came over the devil's back was sure to go away under the devil's," or, other words, that "Ill-gotton wealth does no man any good," referring that, after all, "Honesty is the best policy." He did this whilst approvingly of true and faithful statements of accounts being issued by the pursers I mines, and faithful reports of the mines by the managers.

Incomingly of Greening fathful statements of accounts being issued by the pursers f mines, and fathful reports of the mines by the managers.

UPS AND DOWNS IN CORNISH MINING—WEST BASSET, &c.—The report just issued at West Basset is said to be the best that has been report just issued at West Basset is said to be the best that has been issued for many years past, and shares have gone up to 16½ buyers, equal to just 100,000. for the mine. Of course, this must be capital news for those who bought shares at 1s. each a few years since, for that soores, if not hundreds, of shares changed handsat 1s. and below we are perfectly well aware of. These buyers have taken up the dividends that have been declared, and can now sell their shares for as many pounds as they gave pence for them. If good news for these, how exceedingly exactions for those who held 300, 590, and even 1000 shares each, and sold them almost at the lowest prices. But such are the "ups and dovus" of Cornish mining. It is not everyone that is born to take up prizes, and we all know there are a good many blanks as well as prizes. Mr. Daubuz and his friends still hold about two-thirds of West Bassed Mine, and he was one of those, it is stated, who was fortunate enough to pick up shares at the lowest prices. West Bassed is not alone in its ups and downs. In the end of 1879 (about 13 months ago) we called attention to the following shares as selling at very low prices:—9 share, are now 58t, per share.

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Tincroft , 10 , Carn Brea 30 , East Pool , 13 , West Basset , 5 , Wheal Basset 11/2 , Wheal Peever 12 , In addition to the above enormous ri

Wheal Peevor have since paid very large dividends, and West Basset has paid two dividends of 5s. each. This is something like a rise in West Basset of over 1000 per cent.—West Briton,

WATSON BROTHERS' MINING CIRCULAR.

WATSON BROTHERS MINEOWNERS, STOCK AND SHARE DEALERS, &c 1. ST MICHAELS ALLEY, CORNHILL, LONDON.

EAST BLUE HILLS

EAST BLUE HILLS

The cutting into the Pink lode at the 80 fm. level, at Blue Hills Mine, worth 50? per fathom, has caused some excitement in Cornwall, and is directing no little attention to the district, more particularly so to the adjoining mine, into which the lodes run—EAST BLUE HILLS, for which a company has been formed, with a large capital, and every share offered in the first instance to the shareholders in Blue Hills, under whose agents East Blue Hills is introduced and will be managed. We have taken an interest in it; an office has been established in London, and the financial affairs will be under the same supervision as Wheal Crebor.

Penhalls, Blue Hills, Wheal Kitty (St. Agnes), West Kitty, and East Blue Hills form a group of productive properties; the lodes of

East Blue Hills form a group of productive properties; the lodes of the former mines run into East Blue Hills, and have been intersected in the Gumpas adit of this mine. This adit has cost nearly 4000l., and from above it some years ago the tin raised realised 7025.1 fes. 3d.

In olden times we learn from documents before us that Blue Hills and Penhalls made 150,000l. profit from shallow levels. Since they have been worked this time Ponhalls which was again started in 1866.

have been worked this time Penhalls, which was again started in 1866, has paid 18,000% in dividends; Wheal Kitty (St. Agnes), started in 1864, 41,700%. Blue Hills, started much later, has returned 10,000%.

186f, 41,700l. Blue Hills, started much later, has returned 10,000l. of tin, and commenced dividends last year.

The sett of East Blue Hills is about 300 fms. north and south and 300 fms. east and west on the course of the lodes, including the Pink lode lately cut rich at the 80 east in Blue Hills, and going towards East Blue Hills. The Gumpas adit in East Blue Hills forms the boundary of the two setts, was driven at great cost by the old miners, and during their last two years working (1817 and 1818) they sold tin ore for 7025l., all raised above this adit, and which being idle for 60 years got full of rubbish, and run together. Since, however, East Blue Hills sett was taken, more than a year ago, this adit has been cleared and secured up to the Wheal Betsy lode, and will in a very short time reach the Pink lode 50 fms. deep. The agent of Penhalls and Blue Hills writes us that from the knowledge he has gained by 13 years' experience in these lodes (in Blue Hills and Penhalls) that 13 years' experience in these lodes (in Blue Hills and Penhalls) that

13 years' experience in these lodes (in Blue Hills and Fenhalis) that East Blue Hills also if fairly developed will prove equally productive and profitable to the adventurers. The mine is held under the Duchy of Cornwall.

Here, then, is a bona fide speculation, with 3000l. in hand, and an adit to open out rich lodes 50 fms. deep, and any of our friends wishing to join can for the next week have a few shares at a very moderate within

derate price.

D'Eresby Mountain is in 1536 shares only; all fully paid, and of equal value as to dividends, &c., though not all issued at same price. If we get into good ore at No. 6 level and the mine makes large returns, there would be, we apprehend, no objection on the part of the directors to sub-divide the shares and making 1 share into 10 or 20.

The sampling of Wheal Crebor is computed at 516 tons of copper

ore.

We believe that the notices have gone out from the office of the company to inform shareholders in Aberllyn that their proportion of shares in the Gwydyr Amalgamated Company (Limited) is 1½ shares, 17. per share fully paid, for every one held in Aberllyn. Thus an old holder of 100 shares now gets 150. Clementina shareholders get one share. In D'Eresby Consols each shareholder gets 10 shares, 11. each fully paid, for each one now held. The liquidator is making out the accounts, and for whatever cash there may be for distribu-tion in the latter, shareholders will have fully-paid-up shares in Gwydyr, at a discount of 10s., and with the option of calling for the like number of shares, also at 10s. discount, any time within 12 months. This option itself is worth 10s. per share, for should lead be discovered under the blende in Aberllyn, and it may be near at hand, and shares rise to 1l. or 2l. each, the party taking 100 shares with option now, would have the right to call for 100 more at 10s., whatever the price might be. This plan, the circular informs us, has been desired by most of the shareholders in D'Eresby Consols, instead of taking whatever money there may be after payment of

The Arendal is a limited company, in 12,000 shares of 4l. each, fully paid up. Of preference shares there are 6208 issued of 1l. each. The mine is 72 fathoms deep, and now making large returns. We have not a copy of the last balance-sheet.

Since the above remarks were written upon the division of shares in D'Eresby Mountain we have received a long communication from a large shareholder proposing a plan which seems feasible enough, but into which we are not able to enter this week; we may probably do so in our next. He thinks under his plan that every present holder of one share would get 24, and that they might reach a value of 3l. or 4l. each on a good discovery at No. 6.

We expect shortly a good sale of both copper and tin at Prince of Wales; the dressing machinery had got a little out of order, but is

Wales; the dressing machinery had got a little out of order, but is being put right.

Old Sortridge is coming out again; the mine was very rich shallow, and paid good dividends; but was never proved in depth, or west of the cross-course, where a fine lode has lately been cut. To drive a cross-cut from the adit and get under this discovery, which Capt. Daw thinks will result in a rich course of ore, will take three or four months. The company have no royalty to pay until 60,000% worth of ores have been sold, which is of great advantage. In the old company shares went to a very high price, and with a good discovery "history may repeat itself."

14,381l. 10s. 7d. The directors have declared an interim dividend of 4s. per share, being at the rate of 10 per cent. per annum, payable April 23. This dividend will absorb 10,000l. of the above profit, leaving the balance (4381l. 10s. 7d.) to be dealt with in the annual accounts: 2492 tons of regulus, containing, by analyses, about 1182 tons of pure copper, were produced at Panulcillo in the six months ending Dec. 31 last. The average realised price was \$18 80c. per quintal metrico. Owing to operations at other mines, enquiries made at this office have been transmitted to Chili, in answer to which the manager telegraphed the board under date April 5, that slight traces of gold are found in Panulcillo ores. The manager's balf-yearly manager telegraphed the board under date April 5, that slight traces of gold are found in Panulcillo ores. The manager's half-yearly report on the Panulcillo Mines is annexed to the circular. Mortgage debenture coupons due June 1 next, and also those due Dec. 1 next, may now, or at any intermediate time, be presented at the Consoli-

dated Bank (Limited) for payment under discount at the Bank of England posted rate on the day of presentation.

NEW METHOD OF STOPPING MACHINERY.

An ingenious method of stopping hydraulic machinery used underground has been invented by Messrs. Thompson and Henwood, of Budge-row, their expressed object being to enable water to be more readily and conveniently used as a means of obtaining motive power in mines, underground workings, and other places, without having to employ special or separate means for removing it from such places after it has been used in giving out power and allowed to escape into the mine or working or elsewhere after it has done its work, and thereby overcome what has hitherto been found an objection when water is employed for this purpose by the methods generally in use. They propose to employ a suitably proportioned pipe extending down the shaft or below the surface to the required depth and distance, then up and out of the shaft or to the desired point of exit. Into this descending pipe they lead the water to be using an accumulator or vessel under where there is not sufficient head naturally. From the descending pipe they have been considered to be using an accumulator or vessel under where there is not sufficient head naturally. From the vessel under where there is not sufficient head naturally. From the descending pipe branch pipes are carried through the roadways or workings to the machinery to be set in motion, the exhaust ports of such machinery opening into return pipes connected with a main ascending pipe. The inventors state that by continuing the exit pipe in a direction less elevated than the source of supply, or so that it contains a less pressure than that in the accumulator or vessel under pressure when such is employed it may be conducted into another. pressure when such is employed, it may be conducted into another shaft, underground working, or other place, and again employed in a similar manner, or be continued to various other parts of the works similar manner, or be continued to various other parts of the works for putting machinery into motion or for transmitting motion on the surface, and it will be obvious that so long as the point of exit of the water from the pipe or channel is kept below the level of the point of supply or entrance of the water into the pipe or channel there will that the proprietors had to pay for coal which was not theirs, and so obtained by what may be termed accident. On the other hand, we have instances where the compass had been skilfully used, and the work executed with mathematical accuracy. After all, in those surveys was to know the variation as near as possible of the compass from a certain line.

from a certain line.

Our mining engineers appear to have different opinions on the subject, many of them asserting that a wrong compass could be easily rectified, so that whether the compass was right or wrong its mistake could be easily rectified. But we have recorded that in tunnelling where two points were started, and surveyed by the compass, and so laid out they did not meet within several yards. Coming, however, to the point as to the cause of the variation of the magnetic needle, of which so much has been written and so much left surveyed by: of which so much has been written and so much left untouched by our ablest men, we should not like to offer an opinion of our own, but to some extent the views of some of our mining men are founded but to some extent the views of some of our mining men are founded on the opinions of our ablest sciatists. As these are comparatively unknown we may quote the views of the ablest writer on this subject, Von HUMBOLDT. He tells us that terestrial magnetism is an uninterrupted periodic changebleness due either to the unequally heated mass of the earth itself or to those galvanic currents which are considered as electricity in motion—as electricity in a circuit returning to itself. The mysterious march of the magnetic needle is equally influenced by the course of the sur and change of place upon the earth's surface. By some of our greatest writers the earth has been looked upon as an actual magnet, and these have adopted the theory of GAUSS as to terrestrial magnetism, who asserts, and on been looked upon as an actual magnet, and these have adopted the theory of GAUSS as to terrestrial magnetism, who asserts, and on substantial ground, that every 37 tenths of a cubic foot of the earth possesses on an average at least as much magnetism as a 1 lb. magnetic bar. Iron and nickel are the substances which appear to become permanently magnetic, and retain polarity by a certain coercive force. The views of Arago as to relative magnetism, and of FARADAY as to induced currents, show that in all probability all terrestrial substances may passingly comport themselves magnetic. terrestrial substances may passingly comport themselves magneti-cally. The experiments made by FARADAY and others of our great cally. The experiments made by FARADAY and others of our great natural philosophers prove that water, ice, and charcoal affect the becillation of the needle, and that almost all substances show themselves in a certain degree magnetic when they are conductors—that is to say, when they are traversed by currents of electricity. Our object in again calling attention to surveying and the magnetic needle is the great importance that belongs to them, and the large field there is for our ablest men enlarging on the subject in hand, for the purpose of taking up those points that have yet to be cleared up with respect to our mining surveys, and the best means for ensuring their thorough accuracy. thorough accuracy.

REVOLVING SHUTTERS AND JOINERS' BENCH KNIFE.—At the Building Exhibition, now open, at the Agricultural Hall the exhibits of Messrs. Salmon, Barnes, and Co., of the Canal Head Foundry and Engine Works, Ulverstone, form a prominent feature. The superiority of the revolving divisions manufactured by this firm has already been mentioned, and they are now acquiring an equally high reputation for quality and for size. Probably the largest movable division ever fitted up has been supplied to Scotland by Salmon, Barnes, and Co., for St. Bridget's New Roman Catholic Schools. It is for the purpose of screening the altar from the school-room, and is worked by the patent balance-weight motion belonging to the firm, and can, by means of the ordinary long arm, be raised and lowered instantly. The dimensions, according to the statements which reach us, are so much in excess of what has hitherto been considered practicable in the way of revolving divisions or shutters that the makers may be fairly congratulated on having solved, with their patent balance motion, a difficulty which has hitherto been a serious one furegard to divisions of large apartments. The johners' patent bench knife, another of Messrs. Salmon, Barnes, and Co.'s exhibits, is also well worth inspection, and will be illustrated when opportunity offers.

LLUMINATION BY MEANS OF COMPRESSED AIR.—In a paper read before the Sceitves of Engineers and War. (Mr. (Als. Ul.) at the statements. REVOLVING SHUTTERS AND JOINERS' BENCH KNIFE .- At the

being put right.

Old Sortridge is coming out again; the mine was very rich shallow, and paid good dividends; but was never proved in depth, or west of the cross-course, where a fine lode has lately been cut. To drive a cross-course, which capt. In the chair, Mr. P. F. P. Nursey referred to the necessity of individends and company share went to a very high price, and with the choid hand the lighting of railway carriages, and polatically that of some extent superseded the clong and the lighting of railway carriages, and polatically a cross-course and sale was absorbed, and had made the lighting of railway carriages, and to late the use of gas had that one provided, and had made the lighting of railway carriages, and to late the use of gas had that the use o burner. A carriage thus lighted is running on the Great Northern Railway, and giving a satisfactory light. The cost of the gas at the burner was stated to be 6s. 8d. per 1000 cubic feet. Pintsch's system, which was next described, consists in manufacturing gas from sha'e oil refuse, and storing it under pressure. It is supplied to the railway carriages and used in them under pressure with excellent results, as the author testified from occasional experience on various railways. Its cost was stated to be \(\frac{1}{4}\)d. per light per hour. The system has been in use in Germany and on the Continent generaly for about nine years, and has been adopted by 63 railways and applied to 5500 carriages. In England it has been in use for about five years, five of our leading railways having adopted it, and the number of five of our leading railways having adopted it, and the number of carriages fitted being 700, whilst 300 more are in course of being fitted. The author described its practical application to the lighting of buoys and steamships, in both of which respects it was stated to be a thorough success. The paper was illustrated by diagrams and models, and the compressed oil gas was exhibited in use.

Zectures on Bractical Mining in Germany

CLAUSTHAL MINING SCHOOL NOTES-No. CLXXIII.* BT J. CLARK JEFFERSON, A.R.S.M., WH. SC., Mining Engineer, Wakefield.

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ROTATORY VENTILATORS.

Fabry's ventilator is virtually a pair of toothed wheels of equal diameter, and possessing each three teeth only. The length of each arm to the point of intersection with the cross piece is equal to half the distance between the two axes, and is at the same time equal to the radius of the pitch circle. The following is the mode of setting out the arms, cross pieces; and the touching surfaces of the teeth. The arms will be set out at singles of 120 degrees with each other. From the centre of the wheel describe the pitch circle, and mark off a radial line on each side of the arm, inclined at angles of 300 to the arm. Draw a perpendicular to the arm at the point where it is intersected by the pitch circle. From the ends of the radial lines draw epicycloidal curves, and produce them till they intersect the pitch circle of the second wheel. The portions of the epicycloidal curves between the two pitch circles give the form and extent of the surface of contact for one tooth. In order, however, that the contact of the epicycloidal curve is produced slightly entersually feather when the strength of the surface of contact for one tooth. contact of the epicycloidal surfaces shall always shut off the culvert from the atmosphere the epicycloidal curve is produced slightly outwards (not inwards) from the pitch circle about which they are described beyond the length thus given. The others are all described in a similar manner. It will be seen that the perpendicular to the arm, where it is intersected by the pitch circle, bisects the epicycloidal curves. As these teeth must always be in working contact so as to be air tight, unlike other toothed wheels, the spaces are equal to, and not larger, than the thickness of the teeth.

As already mentioned, each arm exhaust an amount of air equal to that contained between two arms, and consequently for a complete

As already mentioned, each arm exhaust an amount of air equal to that contained between two arms, and consequently for a complete revolution of both wheels the amount of air exhausted is equal to 6:2832 times the breadth, multiplied by the square of the radius of the casing. But the amount of air enclosed between the cross piece off one arm and two arms, and two half cross pieces of the other wheel, if drawn back to the inside of the apparatus. This amount is equal to 0:929 times the product of the breadth into the radius of the pitch circle. Consequently the net amount of air exhausted per revolution is equal to 0:2832 times the product of the breadth into the square of the radius of the casing multiplied into 1, minus 1:103 times the ratio of the radius of the pitch circle to the radius of the casing. The amount of air exhausted per minute is obtained by multiplying by the number of revolutions per minute. From the above it follows that the amount of air exhausted is so much the greater the greater the difference between the two radii, or for a given amount of air, the dimensions of the ventilator (the radius of the casing) is least when the ratio of the radius of the pitch circle to given amount of air, the dimensions of the ventilator (the radius of the casing) is least when the ratio of the radius of the pitch circle to the radius of the casing is least. Since the distance between the two axles is equal to twice the radius of the pitch circle, the radius of the casing must always be less than the difference between the distincter of the pitch circle and the radius of the axle, or that the ratio of the radius of the pitch circle is greater than one half. In most examples of Fabry's ventilator the ratio of the radius of the pitch circle to that of the casing is 0.6. The ratio of the breadth of the ventilator to the casing varies between 1.2 and 1.8. Since by doubling the length of a ventilator the space along which leakage doubling the length of a ventilator the space along which leakage of air can take place is increased only in the cylindrical and not in the vertical sides, the ratio of wind effect is less the broader the rentilator; hence for a given amount of ventilation the best effect is obtained the smaller the radius of the casing compared to its breadth, and the smaller the radius of the pitch circle compared with the radius of the casing. In order to obtain a greater breadth of ventilator it may be advisable to have three sets of arms on each shaft.

The usual dimensions in which Fabry's ventilator has been constructed are—5.3 ft. diameter, 6ft. to 10 ft. in length, distance of the two axes apart 6 to 5 feet, working length of epicycloidal curve 10½ in. The steam-engine to drive the ventilator is reckoned at 15 structed are—5-3 ft. diameter, 6 ft. to 10 ft. in length, distance of the two axes apart 6 to 5 feet, working length of epicycloidal curve 10½ in. The steam-engine to drive the ventilator is reckoned at 15 to 20 horse-power. The wind effect averages 70 per cent. for a water guage reading of 1-5 to 2 in., sometimes reaches 80 per cent.; and in the case of a powerful drag sinks to 50 per cent., owing to the tescape of air between the £rms and £asing: The number of revolutions per minute is 36 to 40, which gives a circumferential velocity of about 20 ft. per second. The useful effect is given at 51 per cent. The volume of air for the smaller ventilators is given at 22,000 cubic feet per minute. M. Trasenster gives the following rule for the volume of air exhausted. The volume of air exhausted in cubic meters equals the theoretical quantity in cubic meters, minus half the square root of the water guage reading expressed in millemeters. Burat gives the following as the cost of the smaller ventilators—Ventilator and engine, 3421; patent right, 604.; buildings, 2001.; culvert and shaft, 481.: total, 6501. Whilst for the larger ventilators the cost is given at about 8251. M. Jochams gives the following particulars of one of Fabry's ventilators, with only two teeth, creeted at the Aisean Colliery—Diameter, 12-5 ft.; length, 3 ft. 8 in.; fdistance of the axes apart, 3 ft. 8 in.; engine, 15-horse power; useful effect, with 0-28 in. water guage depression, 60 per cent.; vith 52 in. depression, 23 per cent.; with 0-68 in. water guage depression, 22-5 per cent.

With regard to Fabry's ventilator Von Hauer says:—"It compares favourably with the ordinary piston ventilators, on account of smaller size, less cost, and a higher effect, which is due chiefly to the absence of valves. They require, however, an exactitude in fitting, which is still more difficult to preserve. With their comparatively light construction a change in shape takes place; the wood becomes drawn, so that after some time the ventilator works not even approxi

time considered by the Belgian mining engineers to be the best, has latterly fallen into disfavour. Whether this disfavour should be vented on the ventilator rather than on the excessive use of wood in its construction may be doubted, since Root's ventilator, which is very analogous in principle, by careful construction and the exclusive use of iron gives as much as 64 per cent. of useful effect with a 5-in. water guage reading.

A description of Root's ventilator, with illustration, having already account in the Lorenze during the sublication of these Lorenze during the sublication of the contract of the contract

appeared in the Journal during the publication of these Lectures, we shall omit repeating information already before the readers. Roth Fabry's and Root's ventilators are usually arranged for being

driven direct from one shaft by means of the steam-engine, the second shaft being driven from the first by the intervention of spur wheels. In one arrangement of Rec's blower two connecting wheels. In one arrangement of Root's blower two connecting rods have been attached to one cross head, the cylinder being placed overhead. Fabry's ventilator has been driven in a similar manner by two connecting rods on each side of the ventilator (four connecting rods in all), working from one cross head on each side connecting roos in ail), working from one cross nead on each side; the two vertical cylinders (one on each side) being placed on the ground. Where a pair of horizontal engines are placed on one side of the ventilator they might work separately on the two shafts, the cranks on the end of the shafts being connected by coupling rods, one on each side of the ventilator.

LEMIELLE'S VETILATOR.—This ventilator is constructed on the shafts of the ventors were invested by Beauch, and like it constructed.

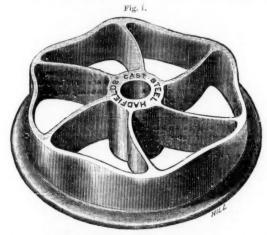
principle of the rotatory pump invented by Bramah, and like it consists of two cylinders. The larger cylinder is fixed in position, and she smaller is attached eccentrically to a shaft in line with the axis of the first, and rotates in such a manner that the outer surface of the smaller cylinder touches the inner surface of the larger. The larger cylinder has an inlet and exhaust opening in the circum-ference, both on the same side of a diameter. The smaller cylinder ference, both on the same side of a diameter. The smaller cylinder is flattened on two sides, forming two flat rectangular surfaces. Longitudinal vanes or wings of the same size as the flat surfaces are hinged to the smaller cylinder, so as to lay close against the flat sur-

Being Notes on a Course of Lectures on Mining, delivered by Herr Bergrath , Von Groppieck, Director of the Boyal Bergakadamie, Clausthal, The Harz

faces when unopened. The unhinged ends of the vanes are attached to the axis of the large cylinder by means of links, so that the vanes open and shut during the rotation. These links keep the free end of the vanes in constant contact with the inner surface of the larger cylinder. The amount of air delivered per revolution is between 1½ times and twice the difference in volume between the two cylinders. This is less than twice the amount of air contained between the two yanes, since a certain amount of air is in the case of Fabry's ventithmes and twice the difference in volume between the two cylinders. This is less than twice the amount of air contained between the two vanes, since a certain amount of air, as in the case of Fabry's ventilator, is brought back from the delivery side to the intake side. The actual amount is of course the difference between the amount carried from the inlet to the delivery opening and that brought back from the delivery to the inlet opening. The volume of air remains the same whatever be the shape of the vanes or wings, and whether the inner cylinder be changed from the cylindrical to any other form. The reason is at once evident—that any change of form which increases the amount of air carried from the inlet to the delivery side increases by just the same amount the volume of air brought back from the delivery to the inlet opening. Upwards of 50 of these ventilators have been erected in Belgium, with three distinct arrangements—vertical with two vanes; vertical with hexagonal drum in pince of the inner cylinder and with six wings or vanes; and lastly the same arranged horizontally. For a given diameter of the exterior cylinder, the volume of air exhausted per revolution is greatest when the radius of the inner revolving cylinder is equal to the eccentricity—i.e. the distance between the centres of the two cylinders. It is evident that the sum of the above cannot exceed the radius of the number of vanes, and for a given size of the outer cylinder also of the absolute values of the radius of the inner cylinder and of the eccentricity—i.e. The eccentricity must be kept considerably less than the radius of the inner cylinder, since otherwise in one position the angle between the vane and the link attached to it would become small, and in such a case the strain thrown on the link by the difference in pressure on the two sides of the vane would be excessive and liable to damage the apparatus. The angle should in no case be angle between the vane and the link attached to it would become small, and in such a case the strain thrown on the link by the difference in pressure on the two sides of the vane would be excessive and liable to damage the apparatus. The angle should in no case be less than 20°. The following is a detailed description of a vertical ventilator with three vanes. The axle is cranked for nearly the whole of its length. The drum is formed by fixing long one-and-a-half inch oak boards to flanges cast on the six-arned hexagonal end pieces, which rotate loose on the short straight portions of the cranked axle. The drum rotates in a cylindrical well or pit, bricked round or covered with cement or boards. The 1½-in, oak boards extend 1 in, or 2 in, beyond the flanges of the end pieces, so as to reach as closely as practicable at the one end of the flat bottom of the pit, and at the other end to the cast-iron discovering the mouth of the pit. The cranked axle is not forged solid in one piece. The cranked portion is formed hollow. The lower straight end of the axle rests without revolving in a cast-iron pivot, and passes through the boss of the lower six-armed end piece, so that they rotate together, and carry the drum around with them. The lower end of this portion of the axle terminates in a conical steel pin, let into the flat horizontal portion of the crank, and thus holds the latter in a vertical position, without causing it to rotate. The links at tached to the loose ends of the vanes terminate at the centre in hoops, which if loose on the cranked portion of the axle about which they revolve as the drum revolves about the straight portion of the aye revolve, as the drum revolves about the straight portion of the aye revolve, as the drum revolves about the straight portion of the aye revolve, as the drum revolves about the straight portion of the aye revolve, as the drum revolves about the straight portion of the aye revolve, as the drum revolves about the straight portion of the aye revolve, as the drum revolves abou which fit loose on the cranked portion of the axle about which they revolve, as the drum revolves about the straight portion of the axle revolve, as the drum revolves about the straight portion of the axle. The upper straight end of the axle passes through a boss in the covering disc, and has a crank keyed on to it above the disc. The slits in the drum through which the links from the loose ends of the vance pass are covered by nailing a strip of leather on each side, which are wide enough to overlap, but which give way as the link moves along the slit. These slits are formed on three of the six sides only. The links are attached at a slight distance from the top and bottom ends of the wings to the latter, owing to the horizontal portion of the cranked axle.

STEEL WHEELS FOR COLLIERY PURPOSES.

Great progress is being made in the manufacture of steel wheels for colliery and other purposes by the Hadfield Steel Foundry Com-



pany, of Sheffield, and the above illustration represents one of these wheels which was picked out of stock in hand and hammered cold. The wheel was firmly fixed, or bedded on an iron anvil, thus getting the full force of each blow, and then tested with no less than 45 swinging blows with a 14 lb. steel sledge hammer. Notwithstanding this very severe test, beyond being bent, as shown by the illustration, Messrs. Hadfield undertake that the wheel may be put in a smith's fire, straightened, and made as good for work as before being hammered, also that a piece cut therefrom shall forge out into a chisel, knife, or other article, thus proving the superior quality of their material. It cannot be doubted that the above test is as severe a one as could be wished for, and much greater than any that can actually occur in the ordinary working of a colliery. Nevertheless, Messrs. Hadfield undertake that, notwithstanding the extreme toughness and tenacity of the specimen in question, this only represents their ordinary material, and that this test should be successfully withstood by all wheels of their manufacture. Special attention is directed to the slight indentations produced by the numerous severe and heavy blows, thus bearing out the speciality they claim for their material over any other steel, malleable iron, or other wheel—stiffness or tenacity. Their wheels thus possess the specially excellent quality of keeping their form and not readily bending out of shore as its Their wheels thus possess the specially excellent quality or tenacity. Their wheels thus possess the specially excellent quality of keeping their form, and not readily bending out of shape, as inor keeping their form, and not readily defining out of shape, as inferior qualities of steel eventually do after becoming worn down a little. Their wheels, therefore, will stand the great and sudden strains experienced in collieries without breaking or easily bending. In order to illustrate the remarkable durability of their wheels and axles, the section of tread is given, the dotted lines of which show

the shape after being in use the time undermentioned. This section has been carefully taken from a set of their steel wheels, kindly fur-

nished by a customer who has several thousand of them at work. This set of wheels and axles was fitted by their patent fast method, and has run 41,000 miles, carried nearly 10,000 tons of coal, and although running constantly for five years it will be noticed that they are worn little more than $\frac{1}{8}$ in. on the tread; the wheels in question were only 9 in. in diameter, and weighed but 14 lbs. each when put into use.

were only 9 in. in diameter, and weighed but 14 lbs. each when put into use.

To give some idea of Messrs. Hadfield's capacity for manufacture in this department, they have now in stock over 1100 different wheel roller, pulley, and pedestal patterns, any of which can be ready for use on the shortest notice. To this stock they are constantly making new additions to suit the varied requirements of different customers. To show the heavy class of steel castings now being used, it may be mentioned that Hadfield's Steel Foundry Company have recently cast a pair of large spur wheels, 10 ft. diameter, weighing over 6 tons each. Such gearing being machine moulded is considered much superior and better in every way than that made from patterns, which are liable to warp, &c. This is regarded as a matter to which colliery proprietors and others should give careful attention, as by the adoption of machine-moulded steel gearing, freedom can be secured from the costly and serious breakdowns which are now experienced with iron and other gearing. Messrs. Hadfield have been awarded one out of the five medals granted to Great Britain at the Sydney International Exhibition, and also the Gold Medal at Paris, 1878, and have carried off the highest prizes wherever exhibited at other exhibitions.

COATING TIN-PLATES WITH GLASS.

It is well known that when preserved fruit, vegetables, and other abstances containing acids are packed in boxes or cans made of substances containing acids are packed in boxes or cans made of ordinary tin-plate, the acids and salts frequently affect the metal in such a manner that certain chemical actions take place whereby the contents are damaged, and many attempts have heretofore been made to render the tin or other plate impervious to the action of these acids and salts. These attempts have, however, been only partially successful, but by means of the present invention the metal is entirely protected against the action of acids or salts. In practice Messrs, Parry and Cobley, of Dunstable, coat the tin-plates with a mixture consisting of an insoluble silicate or fluo-silicate, and a soluble silicate or fluo-silicate. They prefer to employ as the insoluble portion of the composition silicate of lime, or what is known as glass-powder, previously acted upon by fluoric acid; and as the soluble portion of the composition silicate of soda and potash. They prefer that kind of silicate of lime which has been produced by double decomposition from polysulphide of calcium, and hydrate of lime; or they may use a silicate of the earthy bases or metals, or precipitated gelatinous silica. To fix the alkali or remove the same they employ a bath containing a dilute solution of fluo-silicic acid when fluoric acid has not been used, or they may employ for this purpose a dilute solution of any other suitable acid.

The composition is made by mixing the soluable with the insoluble silicate, and the proportions may be equal in ordinary cases, but they may be varied according to the consistency required for the work to be performed, this being a matter which will be readily understood by the workman. The plates are coated or covered with this composition or mixture by means of a brush, or they may be coated by being dipped into a bath thereof, or in any manner most convenient. After the coating has been effected the plates are dried in stoves or otherwise, and are then ready to be made up in boxes or cases in any ordinary manner. By means of the invention ordinary tin-plate, the acids and salts frequently affect the metal in such a manner that certain chemical actions take place whereby the

UTILISATION OF COAL TAR AND PITCH.

After the process of distilling has been pushed as far as it can safely be by the process now in use without too much injuring the stills and running the risk of making the residue boil over into the condenser, there remains a material which Mr. George Wischin, of Prague, utilises for the extraction of anthracene. He assists the distillation of coal tar in its last stage, or the distillation of molten pitch from which the anthracene has not been perfectly extracted, by pitch from which the anthracene has not been perfectly extracted, by adding crososte oil, anthracene, or other hydro-carbons. He finds that the more thoroughly intimately and rapidly the gradually introduced oil, or hydro-carbon, or its vapour, be mixed with the hot pitch the better is the result. He introduces the hydro-carbon or its vapour as hot as he can conveniently make it, whereby the pitch is briskly agitated, and mixes rapidly and intimately with the hydro-carbon. He agitates the pitch by any means used for the agitation of liquids or sediments suspended in liquids, and introduces the hydrocarbon by means of any mechanical means and appliances at command, such as pumps, elevated cisterns containing the hydro-carbon, montjies, injectors worked by steam or compressed gases, or preferably such as are nearly free of oxygen.

The next step in the process consists in disintegrating the hydrocarbon to convert it into spray on its way to the pitch, by means of gases—by preference nearly free of oxygen, steam, or other vapours—introduced simultaneously with the oil; or he mixes previously with the oil before its introduction into the still, or introduces simultaneously with the oil small quantities of water or other liquid of with the oil before its introduction into the still, or introduces simultaneously with the oil, small quantities of water or other liquids of comparatively low boiling point, which by their rapid transformation into the gaseous state disintegrate the oil or pulverise the oil, and make it to mix rapidly and intimately with the pitch. Another way of accomplishing his object is to employ a mechanical rotary agitator with a hollow shaft, preferably agitating during the entire distillation; creosote is injected during the latter part or the entire period through the hollow shaft, and strong perforated branch pipes from the shaft bottom. rom the shaft bottom.

ILLUMINATED OIL CAN.—The oiling of machinery in darkness requires no small amount of attention, as well to avoid danger from moving machinery, as to prevent spilling the oil. Until now it has been necessary to resort to the inconvenience of carrying a burning lamp in one hand, whilst the other endeavours by the uncertain light to discover the places which require oiling. This difficulty is overcome by the use of Cooke's patent oil can and lantern combined, which is useful in all factories for locomotives, and especially for oiling machinery in motion in darkness. The discovery consists of the combination of an oil can with Boll's lantern, which occupies no more room than an ordinary oil can, and eyen contains as much oil. nore room than an ordinary oil can, and even contains as much oil. It can be used in the darkness, since it illuminates the required portion of the machine with its own light; it is carried in one hand, so that the other is perfectly free. The light of the lamp is so arranged that rays falls directly around the spout of the can, so that the operator can see distinctly what he is doing. The thumb of the operator rests upon an aperture which controls the flowing of the oil, so that rests upon an aperture which controls the flowing of the oil, so that not a drop can escape until the spout lies upon the required spot of the machine, when by unclosing the aperture the oil flows out. The tube of the can be removed, and the can may then be used as an ordinary lantern. The lamp is so placed in the lantern that the lubricating material is warmed, and, in consequence, flows readily even in cold weather. The value of a lubricant lost in a large factory with ordinary apparatus reaches a large amount annually; it is, therefore, desirable that the operator be able to see whether the oil described the results of the results. And the manufactures flows into the machine or upon the foot-plate. And the manufacturer of the Patent Lantern Oil Can is fully justified in saying that the value of the oil wasted in one month in a large factory would quite repay the cost of such a can. The inventor makes also special designs with a syringe arrangement for all kinds of machines, if they are in motion, or a conductor is required for the lubricant.—Techn

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Me write: 1400 to 500 to 1400 to 500 to 1500 t

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Copper foundle Reg Chilian tons fin la Mor: 110 ton 12s. 9d. Cove or 460 ton for past

THE TIN TRADE.

ati	Stics of Am.	ight	, 10	1arch 3	1, 2	1879	١, ١
	Straits and Australian, spotTons	8,054		8,022		9,763	
	Straits and Australia, landing	826		239		298	
	Straits, afloat	470		dnam		650	
	toot malian affort	1.499		1.456		1.703	
	Haves on warrants	1.451		1,565		2.052	
	million anot	1,630		1.692		2.101	
	∆ustralian tin in Holland		*****	200	*****	297	
	Total	14,780 .		14,174		17,914	
	Detace of Straits and Australian	288 5 .	1	€88 0		£68 10	
	n Userlan during month in London	1.168		980		1.054	
	,, ,, Holland	810	*****	401	**** *	630	
	Total	1,918	*****	1,381		1,684	
	Shipments during the month from	Straits	3	9	50 to	18.	
	D 29	Austra	ılia	7	75 ,		
			D	uring t	welv	e month	38,
			188	31.		1880.	
	Shipments from Straits to London	Tons	4,8	30		1,830	
	Glainments from Australia to London		8.6	90		7.483	
	Deliveries of tin in London		13.4	16		12.551	
	Deliveries of tin in London and Hollan	d	21,1	99	******	20,496	
	Banca in Trading Company's han	ds and	afloa	t, 1818	tons.		

Hanca in Trading Company's hands and affoat, 1818 tons.

Prices: Straits of Australian, spot, 881. 5s.; affoat, 891. 5s. English common ingots, 921.; refined, 941. Banca, 891.; Billiton, 881.

Stocks of all kinds of tin in American ports (including quantity affoat), Feb. 28, 1881, 3710 tons; March 31, 1881, 3294 tons; March 31, 1880, 8000 tons.

Stocks of all Rinds of the August 1981, 3294 tons; March 31, 1850, 8000 tons.

Messrs. EBELING and HAVELAAR (Rotterdam, March 31) state: —
We have had a very quiet but steady tin market throughout this month. Prices have fluctuated but little. Consumers have been buying regularly, and the demand was liberally met by holders. The general dulness of trade, more especially of the metal market, has withheld speculators from renewing operations. Under these circumstances prices are at present ruled by supply and legitimate demand only, which we look upon as very satisfactory. The Dutch Trading Company's second sale in 1821 took place yesterday, when 23,417 slabs Banca were sold from 53 ft. to 53½ ft., average 53½ ft. Next sale will be held towards the end of May. Banca has been in good request, the price declining from 53 ft. to 52½ ft., then again advancing to 53½ ft. to 53½ ft. Since the sale there are buyers at 53 ft. In Billiton spots parcels have been frequently dealt in at steady prices. Forward deliveries were more freely offered. From 52½ ft., the price advanced to 53 ft. and 53½ ft., then again declining to 52½ ft., which is our closing quotation. On Tuesday, the 12th prox., a public sale comprising 13,000 peculs Billiton will take place at Batavia. The position of Banca tin in Holland on March 29, according to the Official Returns of the Dutch Trading Company, was—

W88→	1881.		1880.		1879.	
Import in MarchSlabs	19,726	*****	4,667		8,029	
Total three months	39,660		21,126			
Deliveries in March	14,367		9,205	***-**	12,227	
Total three months	36,465		33,619		27,179	
Stock second hand	46,445	*****	50,068		65,646	
Unsold Stock	51,779				13,882	
Total stock	98,224		78,473		79,468	
AfloatPeculs	3,200	******	4,750		16,500	
Statement of Billiton:-						
Import in MarchSlabs	16,250				4,500	
Total three months	26,750				27,200	
Deliveries in March					7,348	
Total three months	24,847		19,557		20,878	
Stock	52,160	*****	54,141		65,534	
StockPeculs	14,000		7,000		17,000	
Quotation, March 31-Banca	53 fl.		51 11.		43 fl.	
Billiton	523/4 fl.		50 1/4 fl.		42 fl.	
These combined returns of Banca and B	illiton f	or 188	1, comp	ared	with the	050

These combined returns of Banca and Billiton for 1881, compared with those for 1880, exhibit—An increase of the import for March of 819 tons; an increase of the import for the three months of 901 tons; an increase of the deliveries for March of 371 tons; an increase of the deliveries for the three months of 254 tons; a decrease of the stock second-hand of 175 tons; an increase of the unsold stock of 730 tons; an increase of the total stock of 555 tons; an advance of the quotation of Banca of 33. 8s. per ton.

The Government returns for the month of December are as follows:—

	1880.	1	879.	1	878.		1380.		1879.	1878.
o GermanyTons	230		345		487		3219		3211	 3679
England	83		42		17	********	1356		548	 161
Belgium	79		89		121		2414		1409	 1426
France	22		194		42		603		678	 397
Hamburg	58	***	58		44		765		397	 618
The United States	_	***	412		6	*******	368		760	 19
Other countries	26		13	***	19	*******	729		478	 652
Total	498		1153		736	*******	9454	***	7481	 6952

THE COPPER TRADE.

HENRY R. MERTON and Co. (Leadenhall-street, April 1)

messis. Heart It, menton and Co. (Headenman-street,	43.174.14
issue the following Statistics of Copper:-	
Stocks in Europe:	
Chili ores and regulus. Liverpool and Swansea (fine)Tons	907
Chili bars in Liverpool	19,289
Chili bars in Swansea	11,810
Chili ingots in Liverpool and Swansea	385
Foreign copper (chiefly Australian) in London	8,130
Foreign copper Chili bars and ingots and barilla in Havre	849
Chili bars and ingots and barilla in Havre	3,605
Other copper in Havre	270
Stocks of copper contained in other foreign ore and Spanish Preci-	
pitate (fine)	1,516
Afloat, and chartered from Chili to Europe (advised by mail):	
Ore and regulus (fine)	
Bars and ingots	6,840
By cable, ores and regulus (fine)	
Bars and ingots	700
Affinat from Australia (advised by mail):	
Fine copper	1,841
By cable: Fine copper	684
Total	58.557

Price of bars, 61l.; Wallaroo, 70l. 10s.; English tough, 65l.

Messrs. Harrington, Horan, and Co. (Liverpool, March 31) write:—Ohilli copper charters for the second part of this month were advised as 1400 tons fine copper, all bars and ingots, of which 900 tons are for England and 500 tons for the Continent. Chilli bar market since our last has been very steady at 61/t, 621/5, 51/5 or 500 tgood ordinary brands; special and best are scarce, and up to 62/. 10s, has been paid for the latter. With news of charters came the information that a considerable business in Lota bars had been transacted in Valparaiso, the quantity consisting of two cargoes landed at Swansea and two cargoes afloat—in all about 3100 tons; full particulars regarding cost and disposal of these bars have not yet transpired, but we believe a considerable proportion will be for consumption. In furnace material the sales comprise 352 tons regulus, at 12s, 17/5d.; 110 tons Spanish ore, at 12s, 11/2d.; 460 tons Australian ore for Swansea, at 12s, 6d. to 12s, 9d.; 1110 tons Spanish precipitate, 670 tons of which are for Swansea, at 12s, 6d.; and 73 tons low produce, at 12s, 3d. per unit. There has been no Swansea ale during the past fortnight. Import of Chili copper during the past fortnight is some time last year. Delivery of Chili copper during the past fortnight is some time last year. The arrivals here during the fost fortnight of West Coast (8, A) produce are—The Garland, from Valparaiso, 116 tons regulus and 131 tons bars; the Valparaiso (s.), from Valparaiso, &c., 310 tons bars and 250 tons ingots. At Swansea—nit.

Stocks of copper (Chilian and Bolivian) in first and second hands, likely to be available, we estimate at— Messrs. HARRINGTON, HORAN, and Co. (Liverpool, March 31)

			Barilla.
100	 19,289	 385	 -
 2015	 11,810	 	 -

Messrs. James Lewis and Son (April 1) write: - The market has Messrs, James Lewis and Son (April 1) write:—The market has remained in a very stagnant condition during the past month, notwithstanding the small Chill charters, which have been considerably less than one-half of the average quantity for the past two months, the discovery of an error of 1500 tons excess in the Havre stock, and the sale of 3100 tons of Lota bar copper at Swansca and on the way there by the producers in Chill to consumers in this country, It would naturally be thought that those three important facts, all tending to diminish available supplies, would have had a stimulating effect on prices; but speculation in this metal is so dormant that nothing seems capable of arousing it from the lethargic state which has now characterised it for the last nine months.

Messrs. RICHARDSON and Co. (April 1) write: The stocks of foreign copper produce remaining at Swansea unsold this day are: Copper ore: Newfoundland, 2842 tons; New Quebrada, 457 tons; British, 50 tons = 3349 tons.—Regulus: Chilian, 2015 tons; Spanish, 192 tons = 2207 tons.—Copper: Chilian, 10,810 tons. Precipitate, 564 tons. These totals represent about 13,000 tons fine copper. The private sales comprise the following: 272 tons Gueva de la Mora precipitate at 12s. 6d.; 72 tons Aljustrel precipitate at 12s. 4½d.; 110 tons Alcoutim ore, at 12s. 1½d.; 72 tons Rio Tinto leaf precipitate, at 12s. 6d.; and 12s. 6d.; and 460 tons Australian ore (Kurilla), at 12s. 4½d. per unit. Chile charters advised for past months: First hals, 550 tons fine, all bars and ingots; second half, 900

tons bars and ingots for England, and 500 tons bars for the Continent. We have not much to report by way of variation in prices of bars during the past month, though in the early part of it there was a slight fall, which has since been recovered, and values close as shown. There was a rumour a few days ago of some large transactions in lota bars, but, if correct, particulars have not been made public, except that the quantity is about 3000 tons, part here and part afloat.

THE COAL TRADE.

Mr. J. R. Scott, the Registrar of the London Coal Market, has published the following statistics of imports and exports of coals into and from the port and district of London, by sea, railway, and canal, during March 1821.

during March, 1881	-	IMP	ORTS.		
By Sea. 8 Newcastle Sunderland Seaham Hartlepool Middlesborough Scotch Welsh. Yorkshire King's Lynn Small coal. Cinders Colonial	196	Tons185,159106,2507,85124,8902,7317,13817,5383,0344,937884	By Railway and Canal. Lond. & North-Western. Great Northern. Great Western Midland Great Eastern South-Western South-Western Grand Junction Canal	102,668 91,923 192,807 59,163 5,228 1,503	1 0 18 0 4 8 10
TotalImports—Mar., 1880	465	.316,907	Total Imports—Mar., 1880		
Comp	parati	ve Staten	nent, 1880 and 1881.		
By Sea	Ships.	Tons.	By Railway and Canal.	Tons	e.

Jan. 1 to Mar. 31, 1880 14611,033,167 Jan. 1 to Mar. 31, 1881 13341,028,082	Jan. 1 to Mar. 31, 18811,655,974 12 Jan. 1 to Mar. 31, 18801,650,760 11
Increase—1881 — — — — — 5,085	Increase—1881 51,399 1
EXPORTS DURING	G MARCH, 1881.
Railway-borne coal passing "in transit- Sea-borne coal exported to British Poss or to the coast Ditto sent beyond limits by railway	sessions, or to foreign parts, 64,344 23.695
Ditto by canal and inland navigation ! Railway-borne coal exported to Britis foreign parts, or the coast Ditto, by rail beyond district	h Possessions, or to 28,509
Ditto, by canal and inland navigation Sea-borne coal brought into port and ex Total quantity of coal conveyed beyond	material
	215,420 191,761
Total distribution of coal from Jan. 1 to Total distribution of coal from Jan. 1 to	March 31, 1881 664,986
Increase in the present year	71,013
Less increase in coals imported by rails	71,013 way 51,399
Less decrease in coals imported by sea	5,065= 46,314

FOREIGN MINES.

Total decrease in trade within the London district—1881......

The following were unavoidably crowded out last week:-

FOREIGN MINES.

The following were unavoidably crowded out last week:—

ST. JOHN DEL REY.—Telegram from Morro Velho, dated Rio de Janeiro, March 30: Produce, eleven days, second division of March, 250 oits.; value, 31981.; yield, 44 oits, per ton. Produce small from temporary admixture of quartz and killas.

POTOSI (Gold).—Telegram: Sixteen days full work: Remittance, 200 to 900 ozs.—13/ oz. to the ton.

ALMADA AND TIRITO CONSOLIDATED.—Telegram from Mr. Clemes:—March 14: Driving to the North Tirito 54.

RICHMOND CONSOLIDATED.—March 29: Telegram from the mine at Eureka, Nevada: Week's run, 255,000, from 700 tons of ore: refinery, 250,000.

—R. Rickard, March 9: I beg to hand you report of the different operations for fhe past week. Drift from the Lizette Tunnel cross-cut has been drifted 3f., still in broken ground. The 200 north from No. 18 chamber has been extended 15 ft., in favourable ground. The 500 north drift has been advanced 7 ft. without any change to mention. The 500 north from No. 14 chute has been extended 20 ft. in ledge matter. The 600 north from No. 14 chute has been extended 21 ft. without any change to mention. The 700 north has been advanced 5 ft.; ground hard. The 700 north-west has been extended 20 ft. in ledge matter and low grade ore. The 800 north-west, on fissure, has been advanced 5 ft. without any change. The 900 west drift has been extended 25 ft. in hard limestone. The 1000 ft. level, on quertzite, has been advanced 5 ft. without any change. A drift has been started on the 1000 ft, level in a northerly direction on an open fissure, and has been extended 10 ft. in favourable ground. All the chamgers are looking well. and turning out the usual quantity of fair grade ore. EBERHARDT.—F. Drake: Progress report for week ending March 5: Incline Upraise (Tunnel): Distance run to Feb. 28, 428 ft.; run for the month of February, 112 ft.; March, 16 ft. Distance run from mine incline by contract to Feb. 19; 3ft.; distance run to week ending March 5, 30 ft.; distance run to week ending March 5, 3

matters of detail still to be completed, but these would not interfere with the working of the mill.

SAN PEDRO.—8. Lean, Jan. 18: San Pedro Mine: The \$8 and the chiffon has been completed, and we have begun the chiffon from the \$8 to the 110. This point must be secured before we can begin the repairs to the shaft.—San Antonio Mine: Here we have about 10 metres to sink the shaft, and 5 metres to drive to communicate with the bottom level, in which we have from 8 to 10 metres of water. The end when last wrought was producing 2 tons of 22 per cent. ores per fathom. By driving about 30 metres south and 30 north on the lode, and placing the San Pedro horse-whim on the San Antonio shaft (which is not required in the former mine) will cost about 300l. at present rate of exchange. With this amount I think this mine will pay the cost of working, consequently we have already commenced work, as this is a virgin mine, well struated in a beautiful granite stratum, with several sides, cross and flat lodes, which will drop in in depth and feed the main lode, which will without doubt make this a good dividend-paying mine.

beautiful granite stratum, with several sides, cross and flat lodes, which will drop in in depth and feed the main lode, which will without doubt make this a good dividend-paying mine.

RUBY AND DUNDERBERG CONSOLIDATED.—Report on the mines for the week ended March 6: Dunderberg: The 750 ft. level has been advanced 45 ft. during the week; total 124 ft. from the shaft. The ore in the stope in the back of the 800 ft. level does not look so well neither in the quantity or quality, but is still producing considerable ore. The 800 ft. level has been advanced 16 ft. during the week; total 516 ft. from shaft; this drift is also run by contract at 83:50 per ft. The ore in the stope below the 500 ft. level, at the ourth winze, is about 2 ft. wide, of fair grade. The rise at the end of the drift from the south winze, 40 ft. below the 500, is still in good ore, but is somewhat smaller. The ore in the south stope above the 400 ft. level has improved considerably during the week both in quantity and quality. The 400 ft. south drift from the west cross-cut 180 ft.; the ore is about 3 ft. wide in the face of this drift, and books very promising. The ore is about 3 ft. wide in the face of this drift, and books very promising. The have 35 men, 10 contracts, and 8 tributers at work.—Bullwhacker: The raise from the 250 ft. level has progressed 30 ft. during the week; total 58 ft. above the 250 ft. level; there is yet 25 ft. to go to make connection with the 180 ft. level. A cross-cut has been commenced from the 250 ft. level in an easterly direction; progress this week 10 ft. The main incline has been cleared out to the bottom 70 ft. below the 250 ft. level. We discovered a drift running south from the bottom winch is so full of foul air that we have not been able to do any work in the bottom since. So soon as the connection is made from the rise from the 255 ft. level to the \$100 ft. level; work will then be resumed in the bottom drift; have nine men at work.

from the 250 ft. level to the process.

Telegram received from Eureka, March 29: The week's run from furnace was 87500 from 175 tons ore, producing 25 tons of bullian. The shipments of the week were 129 tons.

\$7500 from 175 tons ore, producing 25 tons of bullian. The shipments of the week were 129 tons.

COLOMBIAN HYDRAULIC.—W. S. Welton, February 10: In my last I anticipated being able to clean up for the mail of 28th ult., but the damage to the ditch was so great, that I could only commence clearing up on the 4th inst. A great slide of ground took place in the ditch, requiring a bridge to be made 140 ft. in length and 16 ft. high. The whole ditch has now been thoroughly gone over, and appears to be in a safe condition. To make up for lost time, I made a clean up of all the sluices, and yesterday the water was turned on and we are running with a full head of water. The run has spread over a period of \$2 days, during which time washing was carried on for 1023 bours, and has resulted in 1015½ oss. amalgam, valued at \$864137½., 733½ ozs. being obtained from the upper and lower sluices, and 282 from No. 3 sluice. The produce appears to be slightly less per hour than for run No. 72, but I am of opinion that this has been caused by a portion of the gold having run down to the lower end the sluice an account of the water having been turned off so frequently and the quicksilver not keeping up. The gravel appears to be quite as good as before. The produce from No. 3 sluice Lonsider very good indeed. A new bulkhead is being made at the new opening, and preparations for laying the Malabar pipe are going on. (The above return of \$6541.37½, added to the gold collected

during the same period, brings the total produce of the three months up to \$10,375, and the total cost for this time, including every exchange on the other side. is \$7648, showing a profit of \$2727 for three months.)

Malpaso.—Feb. 20: Up to date 197 hours have been run, and the gravel continues good. On account of the short time run it was not advisable to clean up for this mail, and a clean up for two months will take place next month. At the new opening the distributor has been moved into position, and I hope to be able to report machine working at No. 3 sluice by next mail.

CANADIAN COPPER.—F. Bennetts, March 17: There has been no change of importance at the Acton, Bolton, or St. Francis Mines during the past week. At the Harford Mine the various stopes are without change in the general production and quality of ores. The vein in the 40,50, and 80 fm. levels, east of No. 7 shaft, are nearly uniform in width, being about 3 ft. wide in each drift, the ores in the 50 being better than the average quality. The vein in the winze sinking under the 50 is still larger than than the size of the winze we carry (6 ft.), and the ores are of good quality; we expect to hole this winze to the backs below in a few days, and open up stoping ground. We have had a few days of fine weather, which has materially assisted us in our dressing, and encouraging us to expect to be able to increase the quantity of the output from the mine almost immediately.

REDUCTION IN THE PRICE OF DYNAMITE.—A circular has been issued by Nobel's Explosive Company which states that the price of No. 1 dynamite has been reduced to 1s. 6d. per pound. The circular also states that the company have now begun to manufacture blasting gelatine, containing about 93 per cent. of nitro-glycerine and 7 per cent. nitro-cotton, which is already a extensive use on the Continent, and wherever it has been triedir this country it has given satisfactory results. The price of this blasting gelatine at present is 2s. 6d. per pound.

28. Ou. per pound.

STOCK EXCHANGE SETTLEMENT.—The following companies have made application to the committee for a settling day and quotation; Eberhardt Company (Limited) shares, Santa Cruz Suiphur and Copper Company shares, Horse Shoe Manufacturing Company shares, and Hoover Hill Gold Mining Company shares.

WEST SETON SALE OF ARSENIC.—The following are the par-culars of a sale, March 25, of 100 tons of arsenic from West Seton Mine:—

Tons.		rn w				igli rsen				nter		id	John		Ame	m	t
50 32 15 3	£5 4 0	2 0 15	7 7 7 7	******	4 2	10 2 0 10	0 0 0	******	£4 3 2 2	6 16 6 0	6 9 6	for the	4 14	6	£256 164 60	9 2 8 6	2899
100 It will b	e si	een o Co	tha	t the	Con	rnw e th	all	Arser	nic	Con	npa	any, wh	o are	the la	£483	7 uye	4 ers

of arsenic in Cornwall, were the purchasers of the entire quantity. They were by far the best bidders, being 12s. 7d. a ton beyond the English Arsenic Company for the 50-ton parcel, and 8s. 1d. a ton beyond John Brown's tender. The disparity in the 15-ton parcel is more apparent still.—West Briton.

Sampled March

		C	OPI	P.1	SR	OR	ES.			
1	9,	and	sold	at	the	Royal	Hotel,	Truro,	March	24
1	18.		Pric	e.	-	M	ines	-	Tone	-

	99 96	£1	9		Gunnislake(Clitters) 75	25	5	0
ditto 96 1 6 0 ditto 75 4 4 ditto 94 1 11 0 ditto 74 4 13 ditto 88 1 8 0 ditto 72 4 4 ditto 80 1 8 0 ditto 70 1 19 0 ditto 70 1 19 0 ditto 75 39 2 34 0 ditto 75 3 9 2 ditto 50 4 18 0 ditto 50 2 13 ditto 50 1 8 0 ditto 50 2 13 ditto 50 2 13 ditto 50 1 8 0 ditto 50 2 13 ditto 40 4 19 40 40 4 19 40 40 40 40 40 40 40 40 40 40 40 40 40 40 40 40 40 40 40								
		 - 4			South Caradon 77		2	n
			6	0			4	6
	34 .	 1	11	0			13	6
	88	 1	8	0		4	4	6
	87 .	 1	6	0		11	19	0
	80 .	 1	8	0				6
	70 .	 5	8	0	Marke Valley 75		9	9
1	60 .	 4	18	0			13	0
5	59 .	 1	4	6				0
tters).)	82	 5	10	6	ditto 35			0
			11	0		3	5	6
	78 .	 5	7	6	Phoenix 42	5		0
		5	15	6		4	3	0
	ters).)	 	80 1 70 5 60 4 59 1 tters), 82 5 81 5 78 5	80 1 8 70 5 8 60 4 18 59 1 4 tters), 82 5 10 78 5 7 76 5 15		87 1 6 0 ditto 75 0 0 1 8 0 ditto 2 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	87	87

					RODUCE.					
unnislake (Clit.)	392	 2154	10	6	Bedford United Phoenix East Caradon	42	340 237 103	6	0	
				-	nd vom					

Names.	Tons.	Ame	11171	t.
Vivian and Sons	. 27914	€ 917	3	0
Grenfell and Sons	. 302	1372	0	6
Nevill, Druce, and Co	. 176%	382	10	0
Williams, Foster, and Co	636	2567	8	0
Mason and Elkington	17214	507	1	-
Charles Lambert and Co	. 3991/2	1603	0	3
Total	1966	£7349	3	6

Sampled March 16, and sold at Tabb's Hotel, Redruth, March 31.

Mines, lanear.... ditto ditto ditto Tons. ... 76 ... 74 ... Mines. Mella TOTAL PRODUCE.

 Mellanear
 512
 £1863
 13
 0
 West Seton
 107
 £ 512
 9
 0

 West Tolgus
 157
 750
 3
 0
 New Cook's Kitch, 104
 706
 2
 0

 Levant
 153
 1025
 5
 6
 Wh. Comford, &c.
 22
 96
 5
 0

 East Pool
 126
 337
 12
 0
 South Crofty
 20
 57
 10
 0

COMPANIES BY WHOM THE ORES WERE PURCHASED. Name. Tons, Vivian and Sons 259½ Grenfell and Sons 222½ Nevill, Druce, and Sons 226½ Williams, Foster, and Co. 76½ Charles Lambert 416 Amount. £1240 5 9 916 1 3 392 14 0 1498 0 6 1201 £5349 9 6

COPPER ORES. Sampled March 23, and sold at Swansea, April 5.

			Produce.				Mines. Tons		. Produce		Price.	
Betts Cove	.110		834	£4	18	6	Caveira Pre	2		391/4	£22	8
ditto	110		R34	- 5	1	6	ditto	2		57	. 32	9
ditto	.110	******	81/2	5	2	6	ditto	2	*****	62	. 35	15
ditto.,	.110	*****	838	5	2	6	ditto	3		301/4	. 17	3
ditto ditto	.110	*****	814	5	1	6	Berehaven	89		81/2	. 5	0
ditto	.110		8/4	9	16	0	ditto	88		8 52	. 5	0
ditto						6	Virneberg	9	*****	2276	13	15
ditto	.117	*****	838	4	18	0	ditto	42		16	. 9	10
ditto	.117		838	4	16	6	ditto	55		113/	6	15
ditto						0	ditto	23		734	. 4	8
Caveira Ore	. 92		81/8	4	7	6	Cop. Residue	3		215/8	. 12	2
ditto	. 92		81/8	4	6	6	Moonta Ore	97	*****	2114	. 12	19
ditto				4	5	6	ditto	9		19	11	19
ditto	. 92		81/8	4	7	6						
TOTAL PRODUCE												

COMPANIES BY WHOM THE ORES WERE PURCHASED.

NO SALE April 19.

O SALE April 19.

TOTALS AND AVERAGES.

21 cwts. Produce. Price. Per unit. Standard
Whole sale ... 1920 15 11 5 11s. 8d. £83 5 9







A DIPLOMA-HIGHEST OF ALL AWARDS-given by the Geographical Congress, Paris, 1875-M. Favre, Contractor, having exhibited the McKean Drill alone as the MODEL BORING MACHINE for the St. Gothard Tunnel.

SILVER MEDAL of the Highland and West of Scotland Agricultural Society, 1875-HIGHEST AWARD.

At the south end of the St. Gothard Tunnel, where

Are exclusively used, the advance made during eight consecutive weeks, ending February 7, was 24 90, 27 60, 24 80, 26 10, 28 30, 27 10, 28 40, 28 70 metres. Total advance of south heading during January was 121.30 metres, or 133 yards.

In a series of comparative trials made at the St. Gothard Tunnel, the McKean Rock Drill continued to work until the pressure was reduced to one-half atmosphere (71 lbs.), showing almost the entire motive force to be available for the blow against the rock—a result of itself indicating many advantages.

The GREAT WESTERN RAJLWAY has adopted these Machines for the SEVERN TUNNEL; the LONDON AND NORTH-WESTERN RAILWAY for the FESTINIOG TUN-NEL: and the BRITISH GOVERNMENT for several Public Works. A considerable number of Mining Companies are now using them. Shafts and Galleries are driven at from three to six times the speed of hand labour, according to the size and number of machines employed, and with important saving in cost. The ratio of advantage over hand labour is greatest a cere the rock is hardest.

hese Machines possess many advantages, which give them value unapproached by any other system of Boring Machine.

THE MCKEAN ROCK DRILL IS ATTAINING GENERAL USE THROUGHOUT THE WORLD FOR MINING, TUN-NELLING. QUARRYING, AND SUB-MARINE BORING.

The Mckean ROCK DRILLS are the most powerful—the Most portable—the most durable—the most compact—of the best mechanical device. They contain the fewest parts-have no weak parts-act without shock upon any of the operating parts-work with a ower pressure than any other Rock Drill-may be worked at a higher pressure than any other -may be run with safety to FIFTEEN HUNDRED STROKES PER MINUTE—do not require a mechanic to work them—are the smallest, shortest, and lightest of all machines—will give the longest feed without change of tool-work with long or short stroke at pleasure of operator.

The same Machine may be used for sinking, drifting, or open work. Their working parts are best protected against and accidents. The various methods of mounting them are the most efficient.

N.B.-Correspondents should state particulars as to character of work in hand in writing us for information, on receipt of which a special definite answer, with reference to our full illustrated catalogue, will be sent.

PORTABLE BOILERS, AIR COMPRESSORS, BORING STEEL, IRON, AND FLEXIBLE TUBING.

The McKean Drill may be seen in operation daily in London.

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MANUFACTURED FOR MCKRAN AND CO. BY
MESSRS P. AND W MACLELLAN, "CLUTHA IRONWORKS
GLASGOW.



By a special method of preparation this leather is made solid, perfectly close in exture and impermeable to water; it has, therefore, all the qualifications essen-al for pump buckets, and is the most durable material of which they can be ade. It may be had of all dealers in leather, and of—

HEPBURN AND GALE,

TANNERS AND CURRIERS, EATHER MILL BAND AND HOSE PIPE MANUFACTURERS LONG LANE, SOUTHWARK LONDON Prize Medals, 1851, 1855, 18 for

MILL BANDS, HOSE, AND LEATHER FOR MACHINERY PURPOSES.

THE UNDERSIGNED, having secured the Grants of several VALUABLE MINERAL PROPERTIES (TIN AND COPPER), in the St. Blazey District, in the vicinity of Fowey Consols, &c., is DESIROUS of OBTAINING the CO-OPERATION of CAPITALISTS for their EXPLORATION. The sach case is very limited.

R. SYMONS in each case is very limited. 11, Parade, Truro, 3rd February, 1881.

MAP OF CALLINGTON, CALSTOCK, AND TAVISTOC MINING DISTRICTS.

Proposed to be published by subscription, a MAP of the ABOVE DISTRICTS, showing the names and boundaries of all existing setts, lodes, cross-courses, and every other matter which such a map should contain. Persons disposed to patronise the publication—at One Guinea per copy—will please send their names as early as possible to me.

R. SYMONS, Mineral Surveyor, Truro.

February 3rd 1831. s early as possible to me. February 3rd 1881.

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AN ELIGIBLE OPPORTUNITY is now offered for the SETTLEMENT of an ACTIVE YOUNG GENTLEMAN IN CANADA. He will be enabled to obtain his profession as a Solicitor in five, or if he be a Graduate in three years. Cost of living about £150. In the meantime ne will have active work, and obtain a knowledge of the Dominion, which is destined to be come one of the most prosperous of the Colonies. Premium, £100 sterling.

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MINING STEEL, BRANDED CELEBRATED CAST STEEL FOR TOOLS, SHEAR, BLISTER, AND SPRING STEEL,

Cast Steel Drills. Solid Steel Hammers. Steel Picks. Steel Wedges.

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JOSEPH FIRTH AND SON'S IMPROVED BRICK-MAKING ${f PATENT}$ MACHINE

EMBRACES THE FOLLOWING ADVAN-TAGES, VIZ .:-

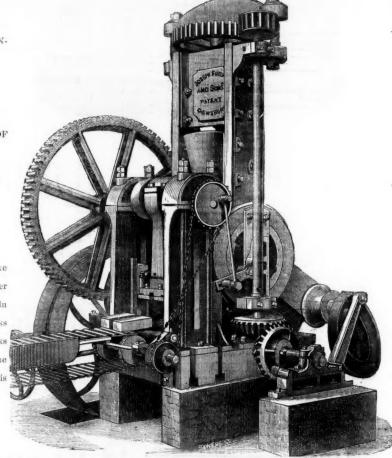
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It makes two bricks at once and will make 12,000 to 14,000 Plastic Pressed Bricks per day, hard enough to go direct to the Kiln without drying; or it will make the bricks thoroughly plastic if required. For Works requiring a Machine at less cost the Machine is made to turn out one brick at once, and is capable of producing 8000 bricks per day



The Machine can be seen at work daily at the Brickworks of the Patentees, Joseph Firth and Sons, Webster Hill, Dewsbury, as also their Patent Gas Kiln for Burning Bricks, which possesses the following amongst other advantages, viz.:—Economy in Fuel, Rapidity and Quality of Work, even Distribution of Heat, and Total Consumption of Smoke.

PERFORATORS, WIRE WEAVERS, AND GENERAL IRONMONGERS.

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J. AND F. POOL,

COPPERHOUSE. HAYLE,

Millimeter holes perforated in sheet-copper, brass, IRON, steel, and zinc.

CERTIFICATE OF MERIT Awarded by the Mining Institute of Cornwall for SIEVES AND GRATES,

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Lineal holes per inch woven in copper, brass, iron, and steel wire. JIGGER-BOTTOMS AND CRUSHER SIEVES

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Manufacturers of Stamps-Grates, Sieves, and Riddles, for Mining and other purposes, by Self-acting Steam Machinery. SPECIALITY.—Thick Copper, Brass, Zinc, and IRON Perforations, Classifying-Sieves, Pierced Pulveriser and Stamps-Grates up to 324 holes to the square inch, Conicalhole Copper Jigger Plates and round bottom "Sifts," Spigot and Faucet Zinc Air-

British and Foreign Safety Fuse Company,



REDRUTH, CORNWALL,

MANUFACTURERS OF

SAFETY FUSE.

FOR MINING AND QUARRYING PURPOSES.

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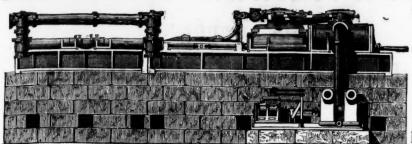
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HATHORN, DAVEY, AND CO., LEEDS.

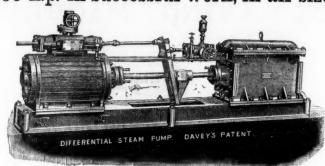
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AS APPLIED UNDERGROUND.

H., D. and Co. have facilities for supplying very powerful Pumping Plant at short notice.

30,000-h.p. in successful work, in all sizes.



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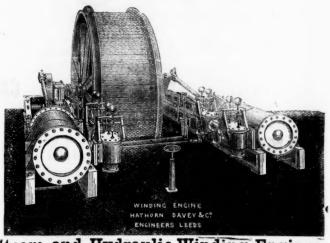
MAKERS of all kinds of

STEAM

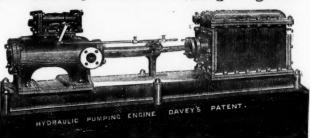
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MINES, AIR COMPRES-SORS, MAN ENGINES, CAPSTANS, &c., &c.

CATALOGUES ON APPLICATION.



Steam and Hydraulic Winding Engines.



Hydraulic Pumping Engines for dip working in Mines, &c.

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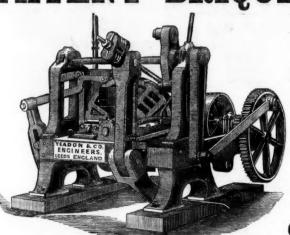
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"BALDWIN-WILDEN" AND "SEVERN." WH "WILDEN" "UNICORN" "ARLEY STAMPING SHEETS, BUTTON IRON AND SHEET IRON, PICKLED, COLD ROLLED AND CLOSE ANNEALED.

TIN PLATES.

"E P & W B" "WILDEN" "UNICORN" "ARLEY "" "STOUR."

PATENT BRIQUETTE MACHINE.



GREAT SAVING NO WASTE COAL.

NO COLLIERY SHOULD BE WITHOUT.

These Machines utilise small coal or coke by making it into Briquettes or blocks of compressed fuel at the rate of 36,000 per The cost of preparing, mixing, and making is under One Shilling per ton. The Briquettes sell readily for Locomotives, Household, or other purposes. Full particulars on application to

YEADON AND CO., LEEDS,

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FOR EVERY DESCRIPTION OF PLANT FOR

Collieries, Mines, and Brickworks.

Messrs. Yeadon and Co., Leeds. Charbonnage de Bernissaet, pres Peruwelz (Belgium), January 4th, 1878. I continue to be perfectly satisfied with the work performed by the two patent Briquette Machines as well as with that of the Steam Engine, Mixer, &c., which you supplied a few months ago for the manufacture of compressed slack Briquettes, and that I can recommend them as being the best machines I know of, after having carefully studied all the Briquette Machines constructed at home and abroad.

G. FAGES, General Manager.

SOCIETE DES CHARBONNAGES REUNIS DU RIEU DU CŒUR ET DE LA BOULE. QUAREGNON (BELGIUM), SEPEEMBER 13th, 1879.

Messrs. Yeadon and Co., Leeds.

We are entirely satisfied with the crection and working of the two Briquette Machines, as well as the Steam Engine and Mixing paratus.

A. FRANEAU, Managing Director.

Messrs. Yeadon and Co., Leeds.

Charbonnage de Bernissart, pres Peruwelz, January 24th, 1879.

I continue to be highly satisfied with the Briquette Machines which you supplied in 1877. They do their work very l, and produce the Briquettes very regularly, and of a good quality.

G. FAGES, General Manager.

Messrs. Yeadon and Co.

Source Hould the pre Vendon Leve Bethune. Pas-de-Calais. December 22d, 1880.

Messrs. Yeadon and Co.

Societe Houilleer de Vendin-lex-Bethune, Pas-de-Calais, December 2nd, 1880.

I have the honour to inform you that the Briquette Machines work very well. The Briquettes are very well made. I am highly satisfied with your workmen, who have done their work very well.

The undersigned, Civil Engineer of Mines, Chevalier of the Legion of Honor, Consulting Engineer for the Mines de Vendin-lexto-Bethune, Pas-de-Calais, certifies that the Briquette Machinery for making Briquettes of Coal, supplied by Messrs. Yeadon and Co., the above Company is working to their continue satisfaction.

Company is working to their entire satisfaction. E. LISBET. Lille, December 28, 1880

ARCHIBALD BAIRD AND SON,

Depot for Colliery Specialities: B67, ROBERTSON STREET, CHARLES CONTRACTOR GLASGOW.

COMMONORANIA POR PORTO P

BORING With 3 Cast Steel up to 31 feet, PRICE, 30s

11'-





BAIRD'S IMPROVED SOLID MOULDED GUTTA PERCHA Price, 3s. 9d per 1



BAIRD AND MACPHERSON'S PATENT TUB GREASER.

THE "BEAUMONT" PATENT PERCUSSIVE ROCK DRILL.



(BEAUMONT AND FOSTER'S PATENT.)

The "BEAUMONT" DRILL is now offered to the public.
For the last three years it has been solely used with complete success by the Aqueous Works and Diamond Rock Boring Company

Works and Diamond Rock Boring Company (Limited), and Messrs. Beaumont and Co. in their several large contracts. During this time it has been so improved and developed as to make it without doubt the best Percussive Rock Drill offered for Tunnelling, Mining, or Quarrying Work. Price and prospectus on application to the Manufacturer,—

JOSEPH FOSTER, MINING ENGINEER,

OW LANE IRONWORKS, PRESTON, LANCASHIRE.

THE AQUEOUS WORKS AND DIAMOND ROCK-BORING COMPANY (LIMITED). CROWN WORKS, GUILDFORD STREET, YORK ROAD, LAMBETH, LONDON.

MESSES. BEAUMONT AND CO., 3, VICTORIA STREET, S.W., WESTMINSTER, LONDON.

Tripods, Tunnelling Carriages, Gadding Cars, Air Compressors, Air Pipes, and other Mining Machinery supplied.

WILLIAM BENNETTS,



PATENT MINERS' SAFETY FUSE



MANUFACTURER.

This manufacture embraces all the latest improvements for use in Blasting in Mines, Quarries, or for Submarine Purposes; and is adapted for exploding Gunpowder, Dynamite, or any other Explosive; and is made suitable for exportation to any part of the world. Price Lists and Sample Cards on application.
All communications to be addressed—

ROSKEAR FUSE WORKS,

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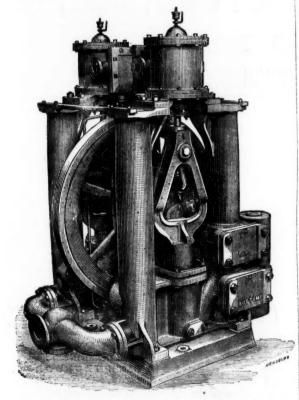
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